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20 25 30

Gly Ser Gly Leu Glu Asp Leu Val Ala Lys Ile Leu Val Cys Phe Asn  
35 40 45

Asn Thr Ile Ser Val Leu Asp Thr Phe Glu Pro Ile Ser Ser Ser Ser  
50 55 60

Ser Leu Ala Ala Val Glu Gly Ser Gln Asn Ala Ser Cys Asp Asn Asp  
65 70 75 80

Gly Lys Phe Glu Asp Ser Gly Asp Ser Arg Lys Arg Leu Gly Pro Val  
85 90 95

Lys Gly Lys Arg Gly Cys Tyr Lys Arg Lys Lys Arg Ser Glu Thr Cys  
100 105 110

Thr Ile Glu Ser Thr Ile Leu Glu Asp Ala Phe Ser Trp Arg Lys Tyr  
115 120 125

Gly Gln Lys Glu Ile Leu Asn Ala Lys Phe Pro Arg Ser Tyr Phe Arg  
130 135 140

Cys Thr His Lys Tyr Thr Gln Gly Cys Lys Ala Thr Lys Gln Val Gln  
145 150 155 160

Lys Val Glu Leu Glu Pro Lys Met Phe Ser Ile Thr Tyr Ile Gly Asn  
165 170 175

His Thr Cys Asn Thr Asn Ala Glu Thr Pro Lys Ser Lys Thr Cys Asp  
180 185 190

His His Asp Glu Ile Phe Met Asp Ser Glu Asp His Lys Ser Pro Ser  
195 200 205

Leu Ser Thr Ser Met Lys Glu Glu Asp Asn Pro His Arg His His Gly  
210 215 220

Ser Ser Thr Glu Asn Asp Leu Ser Leu Val Trp Pro Glu Met Val Phe  
225 230 235 240

Glu Glu Asp Tyr His His Gln Ala Ser Tyr Val Asn Gly Lys Thr Ser  
245 250 255



Gly Phe Arg Phe Tyr Pro Thr Asp Glu Glu Leu Met Val Gln Tyr Leu  
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<212> DNA
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<213> Arabidopsis thaliana

<220>

<223> G185

<400> 5

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atctcaagaa acacgtgaac atttagccaa aaagattctt caatcttacc acaagtctct 240
caccatcatg aactactccg gcgaacttga ccaagtttct caggggtggag gaagcccca 300
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<211> 303

<212> PRT

<213> Arabidopsis thaliana

<220>

<223> G185

<400> 6

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Ile Asn Glu Leu Met Ile Glu Gly Arg Asp Tyr Ala His Gln Phe Gly
      20                      25                      30

Ser Ala Ser Ser Gln Glu Thr Arg Glu His Leu Ala Lys Lys Ile Leu
      35                      40                      45

Gln Ser Tyr His Lys Ser Leu Thr Ile Met Asn Tyr Ser Gly Glu Leu
      50                      55                      60

Asp Gln Val Ser Gln Gly Gly Ser Pro Lys Ser Asp Asp Ser Asp
      65                      70                      75                      80

Gln Glu Pro Leu Val Ile Lys Ser Ser Lys Lys Ser Met Pro Arg Trp
      85                      90                      95

Ser Ser Lys Val Arg Ile Ala Pro Gly Ala Gly Val Asp Arg Thr Leu
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00220:022300



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<211> 1557
<212> DNA
<213> Arabidopsis thaliana
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tcttctccaa	cacaacttgc	atctttaaga	gacatgggaa	tctatgagcc	atttcaacaa	240
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aattatgatt	cttctcataa	ccagatcgaa	gcagaacaac	cttctagtaa	tgataatcaa	420
gatgatgatg	gcaggattca	tgataagatg	aaacggcggt	tagcgcagaa	ccgagaagcg	480
gctcgcaaaa	gtcgttttag	aaagaaggct	tatgttcagc	agttagagga	aagccggtta	540
aagttatcgc	agtttagagca	agaactcgaa	aaggttaagc	agcagggcca	tttaggacca	600
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tccgatgcag caaaagccga tgttttctac ttgatatcgg gaatgtggcg aacttcaacc 840
gaaagattct tccaatggat tggaggggtt cgtccatccg aactttttaa cgttgtgatg 900
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<210> 8  
 <211> 368  
 <212> PRT  
 <213> Arabidopsis thaliana

<220>  
 <223> G629

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             20                    25                    30  
 Lys Ser Asp Ile Asn Asp His Ser Pro Asn Thr Ala Thr Ser Ser Ile  
             35                    40                    45  
 Ile Gln Val Asp Pro Arg Ile Asp Asp His Asn Asn Asn Ile Lys Ile  
             50                    55                    60  
 Asn Tyr Asp Ser Ser His Asn Gln Ile Glu Ala Glu Gln Pro Ser Ser  
             65                    70                    75                    80  
 Asn Asp Asn Gln Asp Asp Asp Gly Arg Ile His Asp Lys Met Lys Arg  
                     85                    90                    95  
 Arg Leu Ala Gln Asn Arg Glu Ala Ala Arg Lys Ser Arg Leu Arg Lys  
             100                    105                    110  
 Lys Ala Tyr Val Gln Gln Leu Glu Glu Ser Arg Leu Lys Leu Ser Gln  
             115                    120                    125  
 Leu Glu Gln Glu Leu Glu Lys Val Lys Gln Gln Gly His Leu Gly Pro  
             130                    135                    140  
 Ser Gly Ser Ile Asn Thr Gly Ile Ala Ser Phe Glu Met Glu Tyr Ser  
             145                    150                    155                    160  
 His Trp Leu Gln Glu Gln Ser Arg Arg Val Ser Glu Leu Arg Thr Ala  
             165                    170                    175

002220:620E5550



Leu Gln Ser His Ile Ser Asp Ile Glu Leu Lys Met Leu Val Glu Ser  
 180 185 190  
 Cys Leu Asn His Tyr Ala Asn Leu Phe Arg Met Lys Ser Asp Ala Ala  
 195 200 205  
 Lys Ala Asp Val Phe Tyr Leu Ile Ser Gly Met Trp Arg Thr Ser Thr  
 210 215 220  
 Glu Arg Phe Phe Gln Trp Ile Gly Gly Phe Arg Pro Ser Glu Leu Leu  
 225 230 235 240  
 Asn Val Val Met Pro Tyr Leu Gln Pro Leu Thr Asp Gln Gln Ile Leu  
 245 250 255  
 Glu Val Arg Asn Leu Gln Gln Ser Ser Gln Gln Ala Glu Asp Ala Leu  
 260 265 270  
 Ser Gln Gly Ile Asp Lys Leu Gln Gln Ser Leu Ala Glu Ser Ile Val  
 275 280 285  
 Ile Asp Ala Val Ile Glu Ser Thr His Tyr Pro Thr His Met Ala Ala  
 290 295 300  
 Ala Ile Glu Asn Leu Gln Ala Leu Glu Gly Phe Val Asn Gln Ala Asp  
 305 310 315 320  
 His Leu Arg Gln Gln Thr Leu Gln Gln Met Ala Lys Ile Leu Thr Thr  
 325 330 335  
 Arg Gln Ser Ala Arg Gly Leu Leu Ala Leu Gly Glu Tyr Leu His Arg  
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 <211> 627  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <223> G435

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 caagaagctt gagccagatc tgaaacttca actgtcgaac cagcttggtc tacctcaaag 180  
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 ttcatacaacc tcatgggtct gattctgttt cgacgcagac aagattccaa tatatatagt 540  
 cttgtctctg ttttgtttcg tttgatctgt ttctctttgt ctgaatagat ttaaaatttg 600  
 taattaaagt cattcagaca ttcacta 627

002220 022220 022220



<220>  
<223> G435

Gln Asp Gln Val Arg Gln Leu Glu Lys Cys Phe Thr Met Asn Lys Lys  
20 25 30

Gln Arg Gln Val Ala Val Trp Phe Gln Asn Lys Arg Ala Arg Phe Lys  
50 55 60

Ala Ala Leu Ser Asp Lys Ala Lys Leu Glu His Gln Val Gln Phe Leu  
85 90 95

Gln Asp Ser Pro Val Asp Asn Ser Asn Leu Gly Ser Cys Asp Glu Asp  
115 120 125

Ser Asn Gly His Gly Ser Ser Ser Thr Ser Trp Val  
145 150 155

<220>  
<223> G4

<400> 11						
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tacctccgcc	gaggtccctc	cgcgtcacta	acgagtttat	ctggccggat	ctgaaaaaca	180
aagtgaaagc	ttcaaagaag	agatcgaata	agcgatccga	ttttcttcgat	cttgacgatg	240
atttcgaagc	tgattttccaa	gggtttaagg	atgactcggc	ttttgactgc	gaagacgatg	300
atgatgtctt	cgtcaatggt	aagcctttcg	tcttcaccgc	aactactaag	cccgtagctt	360
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<210> 12
<211> 375
<212> PRT
<213> Arabidopsis thaliana

<220>
<223> G4

<400> 12
Met Cys Gly Gly Ala Ile Ile Ser Asp Phe Ile Pro Pro Pro Arg Ser
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Leu Arg Val Thr Asn Glu Phe Ile Trp Pro Asp Leu Lys Asn Lys Val
          20           25           30
Lys Ala Ser Lys Lys Arg Ser Asn Lys Arg Ser Asp Phe Phe Asp Leu
      35           40           45
Asp Asp Asp Phe Glu Ala Asp Phe Gln Gly Phe Lys Asp Asp Ser Ala
      50           55           60
Phe Asp Cys Glu Asp Asp Asp Asp Val Phe Val Asn Val Lys Pro Phe
      65           70           75           80
Val Phe Thr Ala Thr Thr Lys Pro Val Ala Ser Ala Phe Val Ser Thr
          85           90           95
Val Gly Ser Ala Tyr Ala Lys Lys Thr Val Glu Ser Ala Glu Gln Ala
          100          105          110
Glu Lys Ser Ser Lys Arg Lys Arg Lys Asn Gln Tyr Arg Gly Ile Arg
      115           120           125
Gln Arg Pro Trp Gly Lys Trp Ala Ala Glu Ile Arg Asp Pro Arg Lys
      130           135           140

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<210> 14
<211> 173
<212> PRT
<213> Arabidopsis thaliana
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<400> 14
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Ser Val Ser Thr Thr Gly Leu Ala Asn Ser Gly Ser Glu Ser Asp Leu
          20          25          30

Arg Gln Arg Asp Leu Ile Asp Glu Arg Lys Arg Lys Arg Lys Gln Ser
          35          40          45

Asn Arg Glu Ser Ala Arg Arg Ser Arg Met Arg Lys Gln Lys His Leu
  50          55          60

Asp Asp Leu Thr Ala Gln Val Thr His Leu Arg Lys Glu Asn Ala Gln
  65          70          75          80

Ile Val Ala Gly Ile Ala Val Thr Thr Gln His Tyr Val Thr Ile Glu
          85          90          95

Ala Glu Asn Asp Ile Leu Arg Ala Gln Val Leu Glu Leu Asn His Arg
          100          105          110

Leu Gln Ser Leu Asn Glu Ile Val Asp Phe Val Glu Ser Ser Ser Ser
          115          120          125

Gly Phe Gly Met Glu Thr Gly Gln Gly Leu Phe Asp Gly Gly Leu Phe
          130          135          140

Asp Gly Val Met Asn Pro Met Asn Leu Gly Phe Tyr Asn Gln Pro Ile
  145          150          155          160

Met Ala Ser Ala Ser Thr Ala Gly Asp Val Phe Asn Cys
          165          170

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<400> 16
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Asp Pro Arg Leu Thr Glu Phe His Gly Val Asp Asn Ser Ala Gln Pro
          20          25          30
Thr Thr Ser Ser Glu Glu Lys Pro Arg Ser Lys Lys Lys Lys Lys Glu
          35          40          45
Arg Glu Ala Arg Tyr Ala Phe Gln Thr Arg Ser Gln Val Asp Ile Leu
          50          55          60
Asp Asp Gly Tyr Arg Trp Arg Lys Tyr Gly Gln Lys Ala Val Lys Asn
          65          70          75          80
Asn Pro Phe Pro Arg Ser Tyr Tyr Lys Cys Thr Glu Glu Gly Cys Arg
          85          90          95
Val Lys Lys Gln Val Gln Arg Gln Trp Gly Asp Glu Gly Val Val Val
          100          105          110
Thr Thr Tyr Gln Gly Val His Thr His Ala Val Asp Lys Pro Ser Asp
          115          120          125

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<212> DNA
<213> Arabidopsis thaliana
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<210> 22
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<212> PRT
<213> Arabidopsis thaliana
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<400> 22

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145 150 155 160



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<210> 23
<211> 914
<212> DNA
<213> Arabidopsis thaliana
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aaaaaaaaaa	aaaa					914

<220>  
<223> G503

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<400> 24
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<210> 25
<211> 1121
<212> DNA
<213> Arabidopsis thaliana

<220>
<223> G263

<400> 25
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<210> 26
<211> 284
<212> PRT
<213> Arabidopsis thaliana

<220>
<223> G263

<400> 26
Met Thr Ala Val Thr Ala Ala Gln Arg Ser Val Pro Ala Pro Phe Leu
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Ser Lys Thr Tyr Gln Leu Val Asp Asp His Ser Thr Asp Asp Val Val
          20          25          30
Ser Trp Asn Glu Glu Gly Thr Ala Phe Val Val Trp Lys Thr Ala Glu
          35          40          45
Phe Ala Lys Asp Leu Leu Pro Gln Tyr Phe Lys His Asn Asn Phe Ser
          50          55          60
Ser Phe Ile Arg Gln Leu Asn Thr Tyr Gly Phe Arg Lys Thr Val Pro
          65          70          75          80
Asp Lys Trp Glu Phe Ala Asn Asp Tyr Phe Arg Arg Gly Gly Glu Asp
          85          90          95
Leu Leu Thr Asp Ile Arg Arg Arg Lys Ser Val Ile Ala Ser Thr Ala
          100          105          110
Gly Lys Cys Val Val Val Gly Ser Pro Ser Glu Ser Asn Ser Gly Gly
          115          120          125
Gly Asp Asp His Gly Ser Ser Ser Thr Ser Ser Pro Gly Ser Ser Lys
          130          135          140

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His Ala Pro Leu Trp Lys Ser Ser Lys Val Cys Asn  
275 280

<400> 27							
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taccgtagat	atgattgaat	cgaagaaga	gacgagccca	acgtcaagaa	tcgattttcc	900	
ccaagttcag	aaacttttgg	tggagcaaat	ggctctcttc	taaaccaaag	atcctaactt	960	
tacagcagct	ttagcagcag	ctgttaccgg	aaaattgtat	caacaqaatc	ataccqaqaa	1020	



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<210> 28
<211> 302
<212> PRT
<213> Arabidopsis thaliana

<220>
<223> G291
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<400>	28															
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Ile	Gly	Val	Thr	Arg	Met	Arg	Val	Glu	Glu	Asp	Pro	Pro	Thr	Ser	Ala	
			20					25					30			
Leu	Val	Glu	Glu	Leu	Asn	Arg	Val	Ser	Ala	Glu	Asn	Lys	Lys	Leu	Ser	
		35					40					45				
Glu	Met	Leu	Thr	Leu	Met	Cys	Asp	Asn	Tyr	Asn	Val	Leu	Arg	Lys	Gln	
	50					55					60					
Leu	Met	Glu	Tyr	Val	Asn	Lys	Ser	Asn	Ile	Thr	Glu	Arg	Asp	Gln	Ile	
65					70					75					80	
Ser	Pro	Pro	Lys	Lys	Arg	Lys	Ser	Pro	Ala	Arg	Glu	Asp	Ala	Phe	Ser	
				85					90					95		
Cys	Ala	Val	Ile	Gly	Gly	Val	Ser	Glu	Ser	Ser	Ser	Thr	Asp	Gln	Asp	
			100					105					110			
Glu	Tyr	Leu	Cys	Lys	Lys	Gln	Arg	Glu	Glu	Thr	Val	Val	Lys	Glu	Lys	
		115				120						125				
Val	Ser	Arg	Val	Tyr	Tyr	Lys	Thr	Glu	Ala	Ser	Asp	Thr	Thr	Leu	Val	
	130					135					140					
Val	Lys	Asp	Gly	Tyr	Gln	Trp	Arg	Lys	Tyr	Gly	Gln	Lys	Val	Thr	Arg	
145					150					155					160	
Asp	Asn	Pro	Ser	Pro	Arg	Ala	Tyr	Phe	Lys	Cys	Ala	Cys	Ala	Pro	Ser	
				165					170					175		
Cys	Ser	Val	Lys	Lys	Lys	Val	Gln	Arg	Ser	Val	Glu	Asp	Gln	Ser	Val	
			180				185						190			
Leu	Val	Ala	Thr	Tyr	Glu	Gly	Glu	His	Asn	His	Pro	Met	Pro	Ser	Gln	
		195				200						205				
Ile	Asp	Ser	Asn	Asn	Gly	Leu	Asn	Arg	His	Ile	Ser	His	Gly	Gly	Ser	
	210					215					220					
Ala	Ser	Thr	Pro	Val	Ala	Ala	Asn	Arg	Arg	Ser	Ser	Leu	Thr	Val	Pro	
225					230					235					240	



Val Thr Thr Val Asp Met Ile Glu Ser Lys Lys Val Thr Ser Pro Thr  
245 250 255

Ser Arg Ile Asp Phe Pro Gln Val Gln Lys Leu Leu Val Glu Gln Met  
260 265 270

Ala Ser Ser Leu Thr Lys Asp Pro Asn Phe Thr Ala Ala Leu Ala Ala  
275 280 285

Ala Val Thr Gly Lys Leu Tyr Gln Gln Asn His Thr Glu Lys  
290 295 300

<210> 29

<211> 748

<212> DNA

<213> Arabidopsis thaliana

<220>

<223> G1275

<400> 29

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tttccggagc tagacttgtc agatgaatgg atggatgatg atcttggtgc tgcggtttcc 180
gggatgaatc agtcttatgg ttatcagact agtgatgttg ctggtgcttt attctcaggt 240
tcttctagct gtttcagtca tcctgaatct ccaagtacca aaacttatgt tgctgctaca 300
gccactgctt ctgccgacaa ccaaaacaag aaagaaaaga aaaaaattaa agggagagtt 360
gcggttcaaga cacggtccga ggtggaagtg cttgacgacg gggttcaagtg gagaaagtat 420
gggaagaaga tgggaagaa cagcccat ccaagaaact actacaaatg ttcagttgat 480
ggctgtcccg tgaagaaaag ggttgaacga gacagagatg atccgagctt tgtgataaca 540
acttacgagg gttcccacaa tcaactaagc atgaactaag actcgaacta aggcctcaagg 600
cgaccatgct atattcagca catcttattt tctatgggta cgaacgatac ttaaaactgc 660
ttctagttct ttatatccat tgtaaactgg ttgcagggtt acaaattttg agagggtttat 720
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<210> 30

<211> 173

<212> PRT

<213> Arabidopsis thaliana

<220>

<223> G1275

<400> 30

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His Ser Val Phe Glu Phe Pro Glu Leu Asp Leu Ser Asp Glu Trp Met  
20 25 30

Asp Asp Asp Leu Val Ser Ala Val Ser Gly Met Asn Gln Ser Tyr Gly  
35 40 45

Tyr Gln Thr Ser Asp Val Ala Gly Ala Leu Phe Ser Gly Ser Ser Ser  
50 55 60

00220-5202560



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<210> 31
<211> 1195
<212> DNA
<213> Arabidopsis thaliana
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<400> 31						
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ggcttggtgt	taaatacggg	ccaagaaact	ggacagtgat	tagcaaatct	attcccggta	180
gatcggggaa	atcgtgtcgt	ttacgggtgt	gcaaccagct	ttcgccgcaa	gttgagcatc	240
gaatcggttt	ggctgaggaa	gacgagacga	tgcgacgtgc	tcacgctcag	ttcgggaata	300
ggcgggacg	gattgtctcg	cttctcaacg	gtcgtagcga	caacgccgtg	aagaattact	360
ggaactcgac	gctcaagagg	aaatgcggcg	gttacgacca	tcgggggttac	gatgggttcgg	420
aggatcatcg	gccggttaag	agatcggtga	gtgcgggatc	tcacctgtt	gttactgggc	480
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ctggtgccga	cgtaagcgag	gagtcaaaac	gtagccacga	gtcaacgaat	atcaacaaca	720
ccacttcgag	ccgccacaac	cagaacaata	cgggtgtcgt	tatgccgttt	agtgggtgggt	780
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cgggtggtgca	agagatgatt	aaggcggaag	tgaggagtta	catgacggag	atgcaacgga	900
acaatggtgg	cggattcgtc	ggaggattca	ttgataatgg	catgattccg	atgagtcaaa	960
ttggagttgg	gagaatcgag	tagacaaaagt	gagattatta	ggaaactgtt	taaattggag	1020
aagaagaaaa	atgctctgtt	tttttctcct	ttggattagg	cttaagaatt	ttgggtttta	1080
aggaagaata	tagaggaatt	cgagtgtaaca	aagctcgaga	gctggggacg	tagtgcagaa	1140
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<210> 32
<211> 305
<212> PRT
<213> Arabidopsis thaliana
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<223> G242

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Ser Lys Ser Ile Pro Gly Arg Ser Gly Lys Ser Cys Arg Leu Arg Trp  
35 40 45

Cys Asn Gln Leu Ser Pro Gln Val Glu His Arg Pro Phe Ser Ala Glu  
50 55 60

Glu Asp Glu Thr Ile Ala Arg Ala His Ala Gln Phe Gly Asn Lys Trp  
65 70 75 80

Ala Thr Ile Ala Arg Leu Leu Asn Gly Arg Thr Asp Asn Ala Val Lys  
85 90 95

Asn His Trp Asn Ser Thr Leu Lys Arg Lys Cys Gly Gly Tyr Asp His  
100 105 110

Arg Gly Tyr Asp Gly Ser Glu Asp His Arg Pro Val Lys Arg Ser Val  
115 120 125

Ser Ala Gly Ser Pro Pro Val Val Thr Gly Leu Tyr Met Ser Pro Gly  
130 135 140

Ser Pro Thr Gly Ser Asp Val Ser Asp Ser Ser Thr Ile Pro Ile Leu  
145 150 155 160

Pro Ser Val Glu Leu Phe Lys Pro Val Pro Arg Pro Gly Ala Val Val  
165 170 175

Leu Pro Leu Pro Ile Glu Thr Ser Ser Phe Ser Asp Asp Pro Pro Thr  
180 185 190

Ser Leu Ser Leu Ser Leu Pro Gly Ala Asp Val Ser Glu Glu Ser Asn  
195 200 205

Arg Ser His Glu Ser Thr Asn Ile Asn Asn Thr Thr Ser Ser Arg His  
210 215 220

Asn His Asn Asn Thr Val Ser Phe Met Pro Phe Ser Gly Gly Phe Arg  
225 230 235 240

Gly Ala Ile Glu Glu Met Gly Lys Ser Phe Pro Gly Asn Gly Gly Glu  
245 250 255

Phe Met Ala Val Val Gln Glu Met Ile Lys Ala Glu Val Arg Ser Tyr  
260 265 270

Met Thr Glu Met Gln Arg Asn Asn Gly Gly Gly Phe Val Gly Gly Phe  
275 280 285



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<400> 34
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  1             5             10             15

Ile Thr Arg His Leu Leu Gly Gly Gly Glu Asn Glu Leu Arg Leu
          20             25             30

Asn Glu Ser Thr Pro Ser Ser Cys Phe Thr Glu Ser Trp Gly Gly Leu
          35             40             45

Pro Leu Lys Glu Asn Asp Ser Glu Asp Met Leu Val Tyr Gly Leu Leu
  50             55             60

Lys Asp Ala Phe His Phe Asp Thr Ser Ser Ser Asp Leu Ser Cys Leu
  65             70             75             80

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<210> 35
<211> 725
<212> DNA
<213> Arabidopsis thaliana
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gccattttcca	accaacggtc	aaaacccgta	cctcctctac	ggattccaaa	gccctacaaa	180
caatccacaa	tccatgagcc	taagcagcaa	caactcaaca	tcagatgaag	cagaagagca	240
gcagacgaac	aacaatataa	tcaacgagcg	gaagcagaga	aggatgattt	caaaccgaga	300
atccgcaagg	agatcgcgta	tgagggaagca	aagacacctt	gacgagcttt	ggtcacaaagt	360
gatgtgggta	aggatcgaga	atcatcagtt	gcttgataag	cttaacaatc	tctctgagtc	420
tcacgacaag	gttcttcaag	agaatgctca	gcttaaagaa	gaaacatttg	agcttaagca	480
agtgatcagc	gatatgcaa	ttcaaagccc	tttctcttgc	tttagagacg	atataatccc	540
cattgaataa	agcatttttc	cccgattcat	atztatgaaa	attttcttca	agagtatgtt	600
tctttgtatg	tatatgtgga	gatgtatttc	agggttttga	taatatgacc	ctttacgacg	660
acgtttttag	attgtagtaa	atttataaac	taaagaagat	tagtgttaat	gaagaacaaa	720
tataa						725



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<210> 36
<211> 173
<212> PRT
<213> Arabidopsis thaliana
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<400> 36															
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Ser	Ile	Leu	Gln	Ser	Pro	Tyr	Pro	Ser	Asn	Phe	Pro	Ile	Ser	Thr	Pro
			20					25					30		
Phe	Pro	Thr	Asn	Gly	Gln	Asn	Pro	Tyr	Leu	Leu	Tyr	Gly	Phe	Gln	Ser
		35					40					45			
Pro	Thr	Asn	Asn	Pro	Gln	Ser	Met	Ser	Leu	Ser	Ser	Asn	Asn	Ser	Thr
	50					55					60				
Ser	Asp	Glu	Ala	Glu	Glu	Gln	Gln	Thr	Asn	Asn	Asn	Ile	Ile	Asn	Glu
65					70					75					80
Arg	Lys	Gln	Arg	Arg	Met	Ile	Ser	Asn	Arg	Glu	Ser	Ala	Arg	Arg	Ser
				85					90					95	
Arg	Met	Arg	Lys	Gln	Arg	His	Leu	Asp	Glu	Leu	Trp	Ser	Gln	Val	Met
			100					105					110		
Trp	Leu	Arg	Ile	Glu	Asn	His	Gln	Leu	Leu	Asp	Lys	Leu	Asn	Asn	Leu
		115					120					125			
Ser	Glu	Ser	His	Asp	Lys	Val	Leu	Gln	Glu	Asn	Ala	Gln	Leu	Lys	Glu
	130					135					140				
Glu	Thr	Phe	Glu	Leu	Lys	Gln	Val	Ile	Ser	Asp	Met	Gln	Ile	Gln	Ser
145					150					155					160
Pro	Phe	Ser	Cys	Phe	Arg	Asp	Asp	Ile	Ile	Pro	Ile	Glu			
				165					170						

<220>  
<223> G502



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<210> 38
<211> 319
<212> PRT
<213> Arabidopsis thaliana

<220>
<223> G502

<400> 38
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  1             5             10             15

Asp Glu Glu Leu Val Met His Tyr Leu Cys Arg Lys Cys Ala Ser Gln
      20             25             30

Ser Ile Ala Val Pro Ile Ile Ala Glu Ile Asp Leu Tyr Lys Tyr Asp
      35             40             45

Pro Trp Glu Leu Pro Gly Leu Ala Leu Tyr Gly Glu Lys Glu Trp Tyr
      50             55             60

Phe Phe Ser Pro Arg Asp Arg Lys Tyr Pro Asn Gly Ser Arg Pro Asn
  65             70             75             80

Arg Ser Ala Gly Ser Gly Tyr Trp Lys Ala Thr Gly Ala Asp Lys Pro
      85             90             95

Ile Gly Leu Pro Lys Pro Val Gly Ile Lys Lys Ala Leu Val Phe Tyr
      100            105            110

Ala Gly Lys Ala Pro Lys Gly Glu Lys Thr Asn Trp Ile Met His Glu
      115            120            125

Tyr Arg Leu Ala Asp Val Asp Arg Ser Val Arg Lys Lys Lys Asn Ser
      130            135            140

Leu Arg Leu Asp Asp Trp Val Leu Cys Arg Ile Tyr Asn Lys Lys Gly
  145            150            155            160

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Ser Phe Leu Arg Leu Trp Gln His Glu Thr Val Leu Tyr Gly Gln  
305 310 315

<400> 39						
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ggcgatgctc	gttggaacca	catcgctcgt	tcctctgggc	taaagcgaac	tggtaaagagt	180
tgtagattaa	gatggcttaa	ttacttacgt	ccagatgtta	gaagaggcaa	catcactctc	240
gaagaacaat	ttatgatcct	caaactccat	tctctttggg	gcaatagggtg	gtcgaagatt	300
gcgcgaatatc	taccgggaag	aacagataat	gaaataaaga	attattggag	aactcgagtc	360
caaaagcaag	ccaaacacct	aagatgcgat	gtaaacagta	atcttttcaa	ggagactatg	420
agaaatgttt	ggatgccgag	attagtggaa	ggaatcaacg	cccaatcatt	accaccacg	480
tgtgaacaag	tggagtcaat	gatcaccgac	ccaagtcaac	cagttaacga	accgagtcg	540
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gaattgtcag	caacgtcttc	gaattctccg	gctgagacgt	tttcggacgt	tcgaggtggg	660
gtggtgaacg	ggtcaggtta	tgatccgtcg	gggtcaaacg	gtttcggaga	gttcaacgat	720
tggggctgtg	ttggtgggga	caacatgtgg	actgacgagg	agagtttttg	gttcttgcag	780
gaccagttct	gccccgatac	gacatcgtat	tcgtataaatt	aaggaaatat	acgattacta	840
tactgaatga	ggaattcatt	tgcgtcacgt	ttggtgtaatt	attcattcgt	gcgtgatgcc	900
aaattttagat	acggccttgg	tatacgaatc	tttgacttaa	ttattatctt	tctttttcct	960
ctcttggttt	aaacccctga	ttaaattaaq	atttgatcat	caqacqaqqa	tatttgtgat	1020



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<210> 40
<211> 273
<212> PRT
<213> Arabidopsis thaliana
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<400> 40																
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Asp	Ser	Asp	Val	Arg	Lys	Gly	Pro	Trp	Thr	Glu	Glu	Glu	Asp	Ala	Ile	
			20					25					30			
Leu	Val	Asn	Phe	Val	Ser	Ile	His	Gly	Asp	Ala	Arg	Trp	Asn	His	Ile	
		35					40					45				
Ala	Arg	Ser	Ser	Gly	Leu	Lys	Arg	Thr	Gly	Lys	Ser	Cys	Arg	Leu	Arg	
	50					55					60					
Trp	Leu	Asn	Tyr	Leu	Arg	Pro	Asp	Val	Arg	Arg	Gly	Asn	Ile	Thr	Leu	
65					70					75					80	
Glu	Glu	Gln	Phe	Met	Ile	Leu	Lys	Leu	His	Ser	Leu	Trp	Gly	Asn	Arg	
				85					90					95		
Trp	Ser	Lys	Ile	Ala	Gln	Tyr	Leu	Pro	Gly	Arg	Thr	Asp	Asn	Glu	Ile	
			100					105					110			
Lys	Asn	Tyr	Trp	Arg	Thr	Arg	Val	Gln	Lys	Gln	Ala	Lys	His	Leu	Arg	
		115					120					125				
Cys	Asp	Val	Asn	Ser	Asn	Leu	Phe	Lys	Glu	Thr	Met	Arg	Asn	Val	Trp	
	130					135					140					
Met	Pro	Arg	Leu	Val	Glu	Arg	Ile	Asn	Ala	Gln	Ser	Leu	Pro	Thr	Thr	
145					150					155					160	
Cys	Glu	Gln	Val	Glu	Ser	Met	Ile	Thr	Asp	Pro	Ser	Gln	Pro	Val	Asn	
				165					170					175		
Glu	Pro	Ser	Pro	Val	Glu	Pro	Gly	Phe	Val	Gln	Phe	Ser	Gln	Asn	His	
			180					185					190			
His	Gln	Gln	Phe	Val	Pro	Ala	Thr	Glu	Leu	Ser	Ala	Thr	Ser	Ser	Asn	
		195					200					205				
Ser	Pro	Ala	Glu	Thr	Phe	Ser	Asp	Val	Arg	Gly	Gly	Val	Val	Asn	Gly	
	210					215					220					



Trp Phe Leu Gln Asp Gln Phe Cys Pro Asp Thr Thr Ser Tyr Ser Tyr  
260 265 270

Asn

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<210> 41
<211> 1360
<212> DNA
<213> Arabidopsis thaliana
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<220>  
<223> G555

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cgagcaactt	ttgtttgggg	ttaagctcaa	agaatccgtt	cttttcagtc	tttactccat	180	
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agctctggag	accaagccca	ttctaccgct	ggagatgggg	caatggcatt	tgatgtagaa	600	
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cgtgctctta	gctctctatg	gcttgccaga	ccaagagagt	gaacctagac	tctattatac	1260	
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<210> 42
<211> 330
<212> PRT
<213> Arabidopsis thaliana
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<220>  
<223> G555











<400> 45						
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agaatcgaaa	cgaaagaaga	tttgatgaac	gacgccgttt	tcattgagcc	gtggcttaaa	180
cgcaaacgct	ccaaacgtca	gcgttctcac	agcccttctt	cgtcttcttc	ctcaccgcct	240
cgatctcgac	ccaaatccca	gaatcaagat	cttacggaag	aagagtatct	cgctctttgt	300
ctctctcagc	tcgctaaaga	tcaaccgtcg	caaacgcgat	ttcatcaaca	gtcgcaatcg	360
ttaacgccgc	cgccagaatc	aaagaacctt	cgcgtacaagt	gtaacgtctg	tcaaaaagcg	420
tttcttctct	atcaggcttt	aggcggctac	aaagcaagtc	accgaatcaa	taccaccaacc	480
gtaatctcaa	caaccgccga	tgattcaaca	gctccgacca	tctccatcgt	cgccggagaa	540
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gaagaaagga	gccaccgtgg	attcatcgat	ctaaacctac	cggcgttacc	tgaactcagc	780
cttctctaca	atccaatcgt	cgacgaagag	atcttgagtc	cgttgaccgg	taaaaaacgg	840
cttttgttga	ccgatcacga	ccaagtcac	aagaaagaag	atttatcttt	aaaaatctaa	900
tactcgacta	ttaatctctg	tgtgattttt	ttcgttaca	ccatagtttc	attttcattt	960
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<220>  
<223> G1352

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Leu	Lys	Arg	Lys	Arg	Ser	Lys	Arg	Gln	Arg	Ser	His	Ser	Pro	Ser	Ser	
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Ser	Ser	Ser	Ser	Pro	Pro	Arg	Ser	Arg	Pro	Lys	Ser	Gln	Asn	Gln	Asp	
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Leu	Thr	Glu	Glu	Glu	Tyr	Leu	Ala	Leu	Cys	Leu	Leu	Met	Leu	Ala	Lys	
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Asp	Gln	Pro	Ser	Gln	Thr	Arg	Phe	His	Gln	Gln	Ser	Gln	Ser	Leu	Thr	
				85					90					95		
Pro	Pro	Pro	Glu	Ser	Lys	Asn	Leu	Pro	Tyr	Lys	Cys	Asn	Val	Cys	Glu	
			100					105					110			
Lys	Ala	Phe	Pro	Ser	Tyr	Gln	Ala	Leu	Gly	Gly	His	Lys	Ala	Ser	His	
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Arg	Ile	Lys	Pro	Pro	Thr	Val	Ile	Ser	Thr	Thr	Ala	Asp	Asp	Ser	Thr	
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Ala	Pro	Thr	Ile	Ser	Ile	Val	Ala	Gly	Glu	Lys	His	Pro	Ile	Ala	Ala	
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Val	Ser	Ser	Thr	Val	Ser	Glu	Glu	Arg	Ser	His	Arg	Gly	Phe	Ile	Asp	
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Leu	Asn	Leu	Pro	Ala	Leu	Pro	Glu	Leu	Ser	Leu	His	His	Asn	Pro	Ile	
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Val	Asp	Glu	Glu	Ile	Leu	Ser	Pro	Leu	Thr	Gly	Lys	Lys	Pro	Leu	Leu	
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002200 020250



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 35 40 45  
 Gly Ala Ala Leu Ser Asp Tyr Ser His Gly Glu Phe Leu Val Ser Asn  
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 His Ser Ser Ser Ser Ala Ala Ala Ala Ile Ala Ser Thr Ser Ser Leu  
 65 70 75 80  
 Pro Thr Ala Ile Ser Pro Pro Leu Pro Ser Ser Thr Ala Pro Val Ser  
 85 90 95  
 Asn Ser Thr Ala Ser Ser Ser Ser Ala Ala Val Pro Gln Pro Ile Pro  
 100 105 110  
 Asp Thr Leu Pro Pro Pro Pro Pro Pro Pro Leu Pro Leu Gln Arg  
 115 120 125  
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 130 135 140  
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 145 150 155 160  
 Asp Asp Asp Asp Asp Asp Asp Asp Asp Ser Glu Met Glu Asn Arg Asp  
 165 170 175  
 Arg Leu Ile Arg Lys Ser Arg Ser Arg Gly Gly Ser Thr Arg Gly Asn  
 180 185 190  
 Arg Thr Thr Ile Glu Asp His His Leu Gln Glu Glu Lys Ala Pro Pro  
 195 200 205  
 Pro Pro Pro Leu Ala Asn Ser Arg Pro Ile Pro Pro Pro Arg Gln His  
 210 215 220

002220 0202560



Gln His Gln His Gln Gln Gln Gln Gln Gln Pro Phe Tyr Asp Tyr Phe  
 225 230 235 240  
 Phe Pro Asn Val Glu Asn Met Pro Gly Thr Thr Leu Glu Asp Thr Pro  
 245 250 255  
 Pro Gln Pro Gln Pro Gln Pro Thr Arg Pro Val Pro Pro Gln Pro His  
 260 265 270  
 Ser Pro Val Val Thr Glu Asp Asp Glu Asp Glu Glu Glu Glu Glu  
 275 280 285  
 Glu Glu Glu Glu Glu Glu Glu Thr Val Ile Glu Arg Lys Pro Leu Val  
 290 295 300  
 Glu Glu Arg Pro Lys Arg Val Glu Glu Val Thr Ile Glu Leu Glu Lys  
 305 310 315 320  
 Val Thr Asn Leu Arg Gly Met Lys Lys Ser Lys Gly Ile Gly Ile Pro  
 325 330 335  
 Gly Glu Arg Arg Gly Met Arg Met Pro Val Thr Ala Thr His Leu Ala  
 340 345 350  
 Asn Val Phe Ile Glu Leu Asp Asp Asn Phe Leu Lys Ala Ser Glu Ser  
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 Ala His Asp Val Ser Lys Met Leu Glu Ala Thr Arg Leu His Tyr His  
 370 375 380  
 Ser Asn Phe Ala Asp Asn Arg Gly His Ile Asp His Ser Ala Arg Val  
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 Asp Asp Gly Lys Asp Asp Val Asp Leu Glu Glu Asn Glu Thr His Ala  
 420 425 430  
 Thr Val Leu Asp Lys Leu Leu Ala Trp Glu Lys Lys Leu Tyr Asp Glu  
 435 440 445  
 Val Lys Ala Gly Glu Leu Met Lys Ile Glu Tyr Gln Lys Lys Val Ala  
 450 455 460  
 His Leu Asn Arg Val Lys Lys Arg Gly Gly His Ser Asp Ser Leu Glu  
 465 470 475 480  
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 485 490 495  
 Met Gln Ser Met Asp Ser Thr Val Ser Glu Ile Asn Arg Leu Arg Asp  
 500 505 510  
 Glu Gln Leu Tyr Leu Lys Leu Val His Leu Val Glu Ala Met Gly Lys  
 515 520 525

002220 022220 022220



Met Trp Glu Met Met Gln Ile His His Gln Arg Gln Ala Glu Ile Ser  
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 Lys Val Leu Arg Ser Leu Asp Val Ser Gln Ala Val Lys Glu Thr Asn  
 545 550 555 560  
 Asp His His His Glu Arg Thr Ile Gln Leu Leu Ala Val Val Gln Glu  
 565 570 575  
 Trp His Thr Gln Phe Cys Arg Met Ile Asp His Gln Lys Glu Tyr Ile  
 580 585 590  
 Lys Ala Leu Gly Gly Trp Leu Lys Leu Asn Leu Ile Pro Ile Glu Ser  
 595 600 605  
 Thr Leu Lys Glu Lys Val Ser Ser Pro Pro Arg Val Pro Asn Pro Ala  
 610 615 620  
 Ile Gln Lys Leu Leu His Ala Trp Tyr Asp Arg Leu Asp Lys Ile Pro  
 625 630 635 640  
 Asp Glu Met Ala Lys Ser Ala Ile Ile Asn Phe Ala Ala Val Val Ser  
 645 650 655  
 Thr Ile Met Gln Gln Gln Glu Asp Glu Ile Ser Leu Arg Asn Lys Cys  
 660 665 670  
 Glu Glu Thr Arg Lys Glu Leu Gly Arg Lys Ile Arg Gln Phe Glu Asp  
 675 680 685  
 Trp Tyr His Lys Tyr Ile Gln Lys Arg Gly Pro Glu Gly Met Asn Pro  
 690 695 700  
 Asp Glu Ala Asp Asn Asp His Asn Asp Glu Val Ala Val Arg Gln Phe  
 705 710 715 720  
 Asn Val Glu Gln Ile Lys Lys Arg Leu Glu Glu Glu Glu Glu Ala Tyr  
 725 730 735  
 His Arg Gln Ser His Gln Val Arg Glu Lys Ser Leu Ala Ser Leu Arg  
 740 745 750  
 Thr Arg Leu Pro Glu Leu Phe Gln Ala Met Ser Glu Val Ala Tyr Ser  
 755 760 765  
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Ser	Pro	Phe 35	Lys	Ser	Asp	Ile	Asn 40	Asn	Ile	Thr	Ser	Asn 45	Gln	Asn	Asn
Asn	Gln 50	Ser	Ser	Ser	Thr	Thr 55	Leu	Glu	Val	Asp	Ala 60	Arg	Pro	Glu	Ala
Asp 65	Asp	Asn	Asn	Arg	Val 70	Asn	Tyr	Thr	Ser	Val 75	Tyr	Asn	Asn	Ser	Leu 80
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<223> G1221



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Lys	Ser	Ile	Pro	Pro	Trp	Lys	Glu	Gln	Ile	Thr	Phe	Arg	Gly	Ile	Val	35	40	45	
Ala	Ser	Leu	Ile	Ile	Gly	Ile	Ile	Tyr	Ser	Val	Ile	Val	Met	Lys	Leu	50	55	60	
Asn	Leu	Thr	Thr	Gly	Leu	Val	Pro	Asn	Leu	Asn	Val	Ser	Ala	Ala	Leu	65	70	75	80
Leu	Ala	Phe	Val	Phe	Leu	Arg	Ser	Trp	Thr	Lys	Leu	Leu	Thr	Lys	Ala	85	90	95	
Gly	Ile	Val	Thr	Lys	Pro	Phe	Thr	Lys	Gln	Glu	Asn	Thr	Val	Val	Gln	100	105	110	
Thr	Cys	Ala	Val	Ala	Cys	Tyr	Ser	Ile	Ala	Val	Gly	Gly	Gly	Phe	Gly	115	120	125	
Ser	Tyr	Leu	Leu	Gly	Leu	Asn	Arg	Ile	Thr	Tyr	Glu	Gln	Ser	Gly	Gly	130	135	140	
Thr	His	Thr	Asp	Gly	Asn	Tyr	Pro	Glu	Gly	Thr	Lys	Glu	Pro	Gly	Ile	145	150	155	160
Gly	Trp	Met	Thr	Ala	Phe	Leu	Phe	Phe	Thr	Cys	Phe	Val	Gly	Leu	Leu	165	170	175	
Ala	Leu	Val	Pro	Leu	Arg	Lys	Ile	Met	Ile	Ile	Asp	Tyr	Lys	Leu	Thr	180	185	190	
Tyr	Pro	Ser	Gly	Thr	Ala	Thr	Ala	Val	Leu	Ile	Asn	Gly	Phe	His	Thr	195	200	205	
Pro	Lys	Gly	Asn	Lys	Met	Ala	Lys	Lys	Gln	Val	Phe	Gly	Phe	Val	Lys	210	215	220	
Tyr	Phe	Ser	Phe	Ser	Phe	Ile	Trp	Ala	Phe	Phe	Gln	Trp	Phe	Phe	Ser	225	230	235	240
Gly	Gly	Thr	Glu	Cys	Gly	Phe	Ile	Gln	Phe	Pro	Thr	Phe	Gly	Leu	Glu	245	250	255	
Ala	Leu	Lys	Asn	Thr	Phe	Tyr	Phe	Asp	Phe	Ser	Met	Thr	Tyr	Val	Gly	260	265	270	
Ala	Gly	Met	Ile	Cys	Pro	His	Ile	Val	Asn	Ile	Ser	Leu	Leu	Phe	Gly	275	280	285	
Ala	Val	Leu	Ser	Trp	Gly	Ile	Met	Trp	Pro	Leu	Ile	Lys	Gly	Leu	Lys	290	295	300	

002220 022200 002220 022200



Gly 305	Asp	Trp	Phe	Pro	Ser 310	Thr	Leu	Pro	Glu	Asn 315	Ser	Met	Lys	Ser	Leu 320
Asn	Gly	Tyr	Lys	Val 325	Phe	Ile	Ser	Ile	Ser 330	Leu	Ile	Leu	Gly	Asp 335	Gly
Leu	Tyr	Gln	Phe 340	Ile	Lys	Ile	Leu	Phe 345	Lys	Thr	Gly	Ile	Asn 350	Met	Tyr
Val	Lys	Leu 355	Asn	Asn	Arg	Asn	Ser 360	Gly	Lys	Ser	Asn 365	Ser	Glu	Lys	Asp
Lys	Gln 370	Ser	Ile	Ala	Asp	Leu 375	Lys	Arg	Asp	Glu	Ile 380	Phe	Val	Arg	Asp
Ser 385	Ile	Pro	Leu	Trp	Val 390	Ala	Ala	Val	Gly	Asn 395	Ala	Ala	Phe	Ser	Val 400
Val	Ser	Ile	Ile	Ala 405	Ile	Pro	Ile	Met	Phe 410	Pro	Glu	Leu	Lys	Trp 415	Tyr
Phe	Ile	Val	Val 420	Ala	Tyr	Met	Leu	Ala 425	Pro	Ser	Leu	Gly	Phe 430	Ser	Asn
Ala	Tyr 435	Gly	Ala	Gly	Leu	Thr	Asp 440	Met	Asn	Met	Ala	Tyr 445	Asn	Tyr	Gly
Lys 450	Val	Ala	Leu	Phe	Ile	Leu 455	Ala	Ala	Met	Ala	Gly 460	Lys	Gln	Asn	Gly
Val 465	Val	Ala	Gly	Leu	Val 470	Gly	Cys	Gly	Leu	Ile 475	Lys	Ser	Ile	Val	Ser 480
Ile	Ser	Ser	Asp 485	Leu	Met	His	Asp	Phe 490	Lys	Thr	Gly	His	Leu 495	Thr	Leu
Thr	Ser	Pro	Arg 500	Ser	Met	Leu	Val	Ser 505	Gln	Ala	Ile	Gly	Thr 510	Ala	Ile
Gly	Cys	Val 515	Val	Ala	Pro	Leu	Thr 520	Phe	Phe	Leu	Phe	Tyr 525	Lys	Ala	Phe
Asp 530	Val	Gly	Asn	Gln	Glu	Gly 535	Glu	Tyr	Lys	Ala 540	Pro	Tyr	Ala	Leu	Val
Tyr 545	Arg	Asn	Met	Ala 550	Ile	Leu	Gly	Val	Glu	Gly 555	Phe	Ser	Ala	Leu	Pro 560
Gln	His	Cys	Leu	Gln 565	Leu	Cys	Tyr	Gly	Phe 570	Phe	Ala	Phe	Ala	Val 575	Ala
Ala	Asn	Leu 580	Val	Arg	Asp	Arg	Leu	Pro 585	Asp	Lys	Ile	Gly	Asn 590	Trp	Val
Pro	Leu 595	Pro	Met	Ala	Met	Ala 600	Val	Pro	Phe	Leu	Val	Gly 605	Gly	Tyr	Phe







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                   20                                  25                                  30  
 His Asn Lys Ser Gln Val Thr Met Glu Glu Val Trp Lys Glu Ile Asn  
                   35                                  40                                  45  
 Leu Gly Ser Leu His Tyr His Arg Gln Leu Asn Ile Gly His Glu Pro  
                   50                                  55                                  60  
 Met Leu Lys Asn Gln Asn Pro Asn Asn Ser Ile Phe Gln Asp Phe Leu  
                   65                                  70                                  75                                  80  
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 Ser Thr Ile Val Thr Ala Leu Tyr Gly Ser Leu Pro Leu Pro Pro Pro  
                   100                                  105                                  110  
 Ala Thr Val Leu Ser Leu Asn Ser Gly Val Gly Phe Glu Phe Leu Asp  
                   115                                  120                                  125  
 Thr Thr Glu Asn Leu Leu Ala Ser Asn Pro Arg Ser Phe Glu Glu Ser  
                   130                                  135                                  140  
 Ala Lys Phe Gly Cys Leu Gly Lys Lys Arg Gly Gln Asp Ser Asp Asp  
                   145                                  150                                  155                                  160  
 Thr Arg Gly Asp Arg Arg Tyr Lys Arg Met Ile Lys Asn Arg Glu Ser  
                   165                                  170                                  175  
 Ala Ala Arg Ser Arg Ala Arg Lys Gln Ala Tyr Thr Asn Glu Leu Glu  
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 Leu Glu Ile Ala His Leu Gln Thr Glu Asn Ala Arg Leu Lys Ile Gln  
                   195                                  200                                  205  
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50 55 60

Gly Val Phe Glu Asp Pro Tyr Leu Asp Lys Glu Val Thr Gln Val Ala  
65 70 75 80

Lys Gln Glu Arg Lys Lys Asn Arg Arg Gly Gly Ala Lys Arg Leu Asp  
85 90 95

Glu Ser Glu Ile Glu Pro Glu Asn Leu Val Pro Glu Glu Trp Arg Asp  
100 105 110

Ile Gln Ala Glu Val Asn Leu Thr Lys Lys Asp Lys Arg Lys Ile Ala  
115 120 125

Gln Glu Met Glu Phe Gly Val Arg Val Glu Lys Lys Arg Gln Gly Leu  
130 135 140







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      20              25              30
Gly Gly Gly Gly Trp Arg Asp Ile Pro Gln Lys Ala Gly Leu Lys Arg
      35              40              45
Cys Gly Lys Ser Cys Arg Leu Arg Trp Ala Asn Tyr Leu Lys Pro Asp
      50              55              60
Ile Lys Arg Gly Glu Phe Ser Tyr Glu Glu Glu Gln Ile Ile Ile Met
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Glu Ser Pro Val Glu Arg His His Glu Ser Ser Ile Lys Glu Val Asp
      35             40             45

Phe Phe Ala Ala Lys Ser Gln Pro Phe Asp Leu Gly His Val Arg Thr
      50             55             60

Thr Thr Ile Val Gly Ser Ser Gly Phe Asn Asp Gly Leu Gly Leu Val
      65             70             75             80

Asn Ser Cys His Gly Thr Ser Ser Asn Asp Gly Asp Asp Lys Thr Lys
      85             90             95

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Asn	His	Lys	Leu	Lys	His	Leu	Leu	Asp	Glu	Val	Ser	Glu	Ser	Tyr	Asn
		115					120					125			
Asp	Leu	Gln	Arg	Arg	Val	Leu	Leu	Ala	Arg	Gln	Thr	Gln	Val	Glu	Gly
	130					135					140				
Leu	His	His	Lys	Gln	His	Glu	Asp	Val	Pro	Gln	Ala	Gly	Ser	Ser	Gln
145					150					155					160
Ala	Leu	Glu	Asn	Arg	Arg	Pro	Lys	Asp	Met	Asn	His	Glu	Thr	Pro	Ala
				165					170					175	
Thr	Thr	Leu	Lys	Arg	Arg	Ser	Pro	Asp	Asp	Val	Asp	Gly	Arg	Asp	Met
			180					185					190		
His	Arg	Gly	Ser	Pro	Lys	Thr	Pro	Arg	Ile	Asp	Gln	Asn	Lys	Ser	Thr
		195					200					205			
Asn	His	Glu	Glu	Gln	Gln	Asn	Pro	His	Asp	Gln	Leu	Pro	Tyr	Arg	Lys
	210					215					220				
Ala	Arg	Val	Ser	Val	Arg	Ala	Arg	Ser	Asp	Ala	Thr	Thr	Val	Asn	Asp
225					230					235					240
Gly	Cys	Gln	Trp	Arg	Lys	Tyr	Gly	Gln	Lys	Met	Ala	Lys	Gly	Asn	Pro
				245					250					255	
Cys	Pro	Arg	Ala	Tyr	Tyr	Arg	Cys	Thr	Met	Ala	Val	Gly	Cys	Pro	Val
			260					265					270		
Arg	Lys	Gln	Val	Gln	Arg	Cys	Ala	Glu	Asp	Thr	Thr	Ile	Leu	Thr	Thr
		275					280					285			
Thr	Tyr	Glu	Gly	Asn	His	Asn	His	Pro	Leu	Pro	Pro	Ser	Ala	Thr	Ala
	290					295					300				
Met	Ala	Ala	Thr	Thr	Ser	Ala	Ala	Ala	Ala	Met	Leu	Leu	Ser	Gly	Ser
305					310					315					320
Ser	Ser	Ser	Asn	Leu	His	Gln	Thr	Leu	Ser	Ser	Pro	Ser	Ala	Thr	Ser
				325					330					335	
Ser	Ser	Ser	Phe	Tyr	His	Asn	Phe	Pro	Tyr	Thr	Ser	Thr	Ile	Ala	Thr
			340					345					350		
Leu	Ser	Ala	Ser	Ala	Pro	Phe	Pro	Thr	Ile	Thr	Leu	Asp	Leu	Thr	Asn
		355					360					365			
Pro	Pro	Arg	Pro	Leu	Gln	Pro	Pro	Pro	Gln	Phe	Leu	Ser	Gln	Tyr	Gly
	370					375					380				
Pro	Ala	Ala	Phe	Leu	Pro	Asn	Ala	Asn	Gln	Ile	Arg	Ser	Met	Asn	Asn
385					390					395					400



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<210> 61
<211> 1046
<212> DNA
<213> Arabidopsis thaliana
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gtctctttta	tcctcaacca	tggacatagt	aactggcgag	ccctccctaa	gcaagctggt	180	
cttttgagat	gtggaaaaag	ctgtagactt	aggtggatga	actattttaa	gcctgatatt	240	
aaacgtggca	atttcaccaa	agaagaggaa	gatgctatca	tcagcttaca	ccaaatactt	300	
ggcaatagat	ggtcagcgat	tgcagacaaa	ctgcctggaa	gaaccgataa	cgagatcaag	360	
aacgtatgcc	acactcactt	gaagaagaga	ctcgaagatt	atcacaccagc	taaacctaa	420	
accagcaaca	aaaagaaggg	tactaaacca	aaatctgaat	ccgtaataac	gagctcgaac	480	
agtactagaa	gcgaatcgga	gctagcagat	tcatacaaacc	cttctggaga	aagcttattt	540	
tcgacatcgc	cttcgacaag	tgaggtttct	tcgatgacac	tcataagcca	cgacggctat	600	
agcaacgaga	ttaatatgga	taacaaaaccg	ggagatatca	gtactatcga	tcaagaatgt	660	
gtttctttcg	aaacttttgg	tgcggatatc	gatgaaagct	tctggaaaga	gacactgtat	720	
agccaagatg	aacacaacta	cgtatcgaat	gacctagaag	tcgctggttt	agttgagata	780	
caacaagagt	ttcaaaaactt	gggctccgct	aataatgaga	tgatttttga	cagtggagatg	840	
gaacttctgg	ttcgatgtat	tggctagaac	cggcggggaa	caagatctct	tagccgggct	900	
ctagttaaca	tgtttgagga	gtaaagtga	atggtgcaaa	ttagttaagg	ctaagaaatt	960	
caaaagcttt	tgtttaccga	gaaaaaaaca	cactctaact	cttgatgtga	tgtagttagt	1020	
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<210> 62
<211> 273
<212> PRT
<213> Arabidopsis thaliana
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<220>  
<223> G233



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Trp Thr Pro Glu Glu Asp Gln Ile Leu Val Ser Phe Ile Leu Asn His  
20 25 30

Gly His Ser Asn Trp Arg Ala Leu Pro Lys Gln Ala Gly Leu Leu Arg  
35 40 45

Cys Gly Lys Ser Cys Arg Leu Arg Trp Met Asn Tyr Leu Lys Pro Asp  
50 55 60

Ile Lys Arg Gly Asn Phe Thr Lys Glu Glu Glu Asp Ala Ile Ile Ser  
65 70 75 80

Leu His Gln Ile Leu Gly Asn Arg Trp Ser Ala Ile Ala Ala Lys Leu  
85 90 95

Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn Val Trp His Thr His Leu  
100 105 110

Lys Lys Arg Leu Glu Asp Tyr Gln Pro Ala Lys Pro Lys Thr Ser Asn  
115 120 125

Lys Lys Lys Gly Thr Lys Pro Lys Ser Glu Ser Val Ile Thr Ser Ser  
130 135 140

Asn Ser Thr Arg Ser Glu Ser Glu Leu Ala Asp Ser Ser Asn Pro Ser  
145 150 155 160

Gly Glu Ser Leu Phe Ser Thr Ser Pro Ser Thr Ser Glu Val Ser Ser  
165 170 175

Met Thr Leu Ile Ser His Asp Gly Tyr Ser Asn Glu Ile Asn Met Asp  
180 185 190

Asn Lys Pro Gly Asp Ile Ser Thr Ile Asp Gln Glu Cys Val Ser Phe  
195 200 205

Glu Thr Phe Gly Ala Asp Ile Asp Glu Ser Phe Trp Lys Glu Thr Leu  
210 215 220

Tyr Ser Gln Asp Glu His Asn Tyr Val Ser Asn Asp Leu Glu Val Ala  
225 230 235 240

Gly Leu Val Glu Ile Gln Gln Glu Phe Gln Asn Leu Gly Ser Ala Asn  
245 250 255

Asn Glu Met Ile Phe Asp Ser Glu Met Glu Leu Leu Val Arg Cys Ile  
260 265 270

Gly

<210> 63

<211> 1296







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<211> 1281
<212> DNA
<213> Arabidopsis thaliana

<220>
<223> G867

<400> 65
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<210> 66
<211> 344
<212> PRT
<213> Arabidopsis thaliana
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  1             5             10             15
Cys Glu Thr Pro Ala Ile Thr Pro Ala Lys Lys Ser Ser Val Gly Asn
      20             25             30
Leu Tyr Arg Met Gly Ser Gly Ser Ser Val Val Leu Asp Ser Glu Asn
      35             40             45
Gly Val Glu Ala Glu Ser Arg Lys Leu Pro Ser Ser Lys Tyr Lys Gly
  50             55             60
Val Val Pro Gln Pro Asn Gly Arg Trp Gly Ala Gln Ile Tyr Glu Lys
  65             70             75             80
His Gln Arg Val Trp Leu Gly Thr Phe Asn Glu Glu Asp Glu Ala Ala
      85             90             95
Arg Ala Tyr Asp Val Ala Val His Arg Phe Arg Arg Arg Asp Ala Val
      100            105            110
Thr Asn Phe Lys Asp Val Lys Met Asp Glu Asp Glu Val Asp Phe Leu
      115            120            125

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<400> 67						
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ccagaagaag	acattaaact	catctctttc	attcaaaagt	ttggtcatga	gaactggaga	120
tctctcccca	aacaatctgg	tatgtcattg	cttttgtcat	cacaatcaaa	gcaaaagcct	180
cttcaattgt	tttttctttt	ctttatgatt	ctgaatgtat	atatatgcaa	aaatgaaggg	240
ctattgaggt	gtgggaagag	ttgtcgtcta	aggtaggatta	actatctttag	gccagatctg	300
aagcgtggca	acttcacttc	agaggaggaa	gaaacaatca	ttaaqtcttc	ccacaactat	360



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<210> 68
<211> 327
<212> PRT
<213> Arabidopsis thaliana
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1				5					10						15	
Gly	Pro	Trp	Ser	Pro	Glu	Glu	Asp	Ile	Lys	Leu	Ile	Ser	Phe	Ile	Gln	
			20					25					30			
Lys	Phe	Gly	His	Glu	Asn	Trp	Arg	Ser	Leu	Pro	Lys	Gln	Ser	Gly	Met	
		35					40					45				
Ser	Leu	Leu	Leu	Ser	Ser	Gln	Ser	Lys	Gln	Lys	Pro	Leu	Gln	Leu	Phe	
	50					55					60					
Phe	Leu	Phe	Phe	Met	Ile	Leu	Asn	Val	Tyr	Ile	Cys	Lys	Asn	Glu	Gly	
65					70					75					80	
Leu	Leu	Arg	Cys	Gly	Lys	Ser	Cys	Arg	Leu	Arg	Trp	Ile	Asn	Tyr	Leu	
				85					90					95		
Arg	Pro	Asp	Leu	Lys	Arg	Gly	Asn	Phe	Thr	Ser	Glu	Glu	Glu	Glu	Thr	
			100					105					110			
Ile	Ile	Lys	Leu	His	His	Asn	Tyr	Gly	Asn	Lys	Trp	Ser	Lys	Ile	Ala	
		115					120					125				
Ser	Gln	Leu	Pro	Gly	Arg	Thr	Asp	Asn	Glu	Ile	Lys	Asn	Val	Trp	His	
	130					135					140					
Thr	His	Leu	Lys	Lys	Arg	Leu	Ala	Gln	Ser	Ser	Gly	Thr	Ala	Asp	Glu	
145					150					155					160	
Pro	Ala	Ser	Pro	Cys	Ser	Ser	Asp	Ser	Val	Ser	Arg	Gly	Lys	Asp	Asp	
				165					170					175		
Lys	Ser	Ser	His	Val	Glu	Asp	Ser	Leu	Asn	Arg	Glu	Thr	Asn	His	Arg	
			180					185					190			



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<210> 69
<211> 826
<212> DNA
<213> Arabidopsis thaliana
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cgtgagcaag	accaatacat	gccaatcgca	aacgtcataa	gaatcatgcg	taaaacctta	180
ccgtctcacg	ccaaaatctc	tgacgacgcc	aaagaaacga	ttcaagaatg	tgtctccgag	240
tacatcagct	tcgtgaccgg	tgaagccaac	gagcgttgcc	aacgtgagca	acgtaagacc	300
ataactgctg	aagataatcct	ttgggctatg	agcaagcttg	ggttcgataa	ctacgtggac	360
cccctcaccg	tgttcattaa	ccggtaccgt	gagatagaga	ccgatcgtgg	ttctgcactt	420
agaggtgagc	caccgtcggt	gagacaaacc	tatggaggaa	atggtattgg	gtttcacggc	480
ccatctcatg	gcctacctcc	tccgggtcct	tatggttatg	gtatggtgga	ccaatccatg	540
gttatgggag	gtggtcggta	ctacccaaaac	gggtcgtcgg	gtcaagatga	atccagtgtt	600
ggtggtggct	cttcgtcttc	cattaaacgga	atgccggctt	ttgaccatta	tggtcagtat	660
aagtgaagaa	ggagttatttc	ttcattttta	tatctattca	aaacatgtgt	ttcgatagat	720
attttatttt	tatgtcttat	caataacatt	tctatataat	gttgcttctt	taaggaaaag	780
tgttgatatgt	caatacttta	tgagaaaactg	at ttatatat	gcaaat		826

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<210> 70
<211> 208
<212> PRT
<213> Arabidopsis thaliana
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<223> G620

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Tyr Met Pro Ile Ala Asn Val Ile Arg Ile Met Arg Lys Thr Leu Pro  
35 40 45

Ser His Ala Lys Ile Ser Asp Asp Ala Lys Glu Thr Ile Gln Glu Cys  
50 55 60

Val	Ser	Glu	Tyr	Ile	Ser	Phe	Val	Thr	Gly	Glu	Ala	Asn	Glu	Arg	Cys
65					70					75					80

Gln Arg Glu Gln Arg Lys Thr Ile Thr Ala Glu Asp Ile Leu Trp Ala  
 . 85 90 95

Met Ser Lys Leu Gly Phe Asp Asn Tyr Val Asp Pro Leu Thr Val Phe  
100 105 110

Ile Asn Arg Tyr Arg Glu Ile Glu Thr Asp Arg Gly Ser Ala Leu Arg  
115 120 125

Gly Glu Pro Pro Ser Leu Arg Gln Thr Tyr Gly Gly Asn Gly Ile Gly  
130 135 140

Phe His Gly Pro Ser His Gly Leu Pro Pro Pro Gly Pro Tyr Gly Tyr  
145 150 155 160

Gly Met Leu Asp Gln Ser Met Val Met Gly Gly Gly Arg Tyr Tyr Gln  
165 170 175

Asn Gly Ser Ser Gly Gln Asp Glu Ser Ser Val Gly Gly Gly Ser Ser  
180 185 190

Ser Ser Ile Asn Gly Met Pro Ala Phe Asp His Tyr Gly Gln Tyr Lys  
195 200 205

<211> 1394

<213> Arabidopsis thaliana

<223> G596

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attagggttt	caattgttta	cttttttggtt	gctttttata	tcaagtaaatg	gatcaggtct	180
ctcgcctctc	tcctccacct	tttctctcaa	gagatctcca	tcttcaccca	caccatcaat	240
tccagcatca	gcagcagcag	cagcaacaga	atcacggcca	cgatatagac	cagcaccgaa	300







[illegible]

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<223> G511

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agtgatgact	caatgcatcg	tgctattccc	gtacttgacg	tctttgaggt	cgagcctagt	180
catcttccaa	atggtgctgg	agtgagatgt	cgaggagacg	ctgagcaatg	gttcttcttc	240
gtgccacgac	aagaacgcga	agcaagagga	ggcagaccga	gtagaactac	tggtttcagga	300
tactggaag	caactggatc	acctgggtcca	gtcttttcca	aagacaacaa	aatgatgtga	360
gcaaaagaaaa	ctatggtttt	ctacactgga	aaagcaccga	caggaaagaaa	aactaaatgg	420
aaaatgaatg	agtaccacgc	cgttgacgaa	acagtcaacg	cttcacacaat	ccctaagctg	480
agacgtgagt	tcagtttatg	tcgagtctac	ataacaacag	gaagctccag	agctttttgat	540
agacgtcctg	agggagtttt	gcagacagag	agaatgctaa	caagtgatgt	tgcagtagct	600
gagacatcgt	tccgtgtgga	aagctcactg	gaaacttcga	tttcaggagg	agaacatatt	660
gatgtctcta	tgaacacaga	gtttgttgat	ggactatcag	aaccgatgtg	ggactgggaa	720
cagctgactt	ggccttgaag	ctatatagat	tttataatca	agcaaaattta	aacttgtttc	780
aattgccttat	tgttagtttg	aattttatga	cccgaagat	tctttttctt	tctttacctt	840
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913

<220>  
<223> G511

[illegible]



<220>  
<223> G471







Glu 305	Lys	Arg	Phe	Ser	Gly 310	Thr	Ile	Val	Gly	Val 315	Gln	Glu	Asn	Lys	Ser 320
Ser	Val	Trp	His	Asp 325	Ser	Glu	Trp	Arg	Ser 330	Leu	Lys	Val	Gln	Trp	Asp 335
Glu	Pro	Ser	Ser 340	Val	Phe	Arg	Pro	Glu 345	Arg	Val	Ser	Pro	Trp	Glu	Leu
Glu	Pro	Leu 355	Val	Ala	Asn	Ser	Thr 360	Pro	Ser	Ser	Gln	Pro 365	Gln	Pro	Pro
Gln	Arg 370	Asn	Lys	Arg	Pro	Arg 375	Pro	Pro	Gly	Leu	Pro 380	Ser	Pro	Ala	Thr
Gly 385	Pro	Ser	Gly	Pro	Val 390	Thr	Pro	Asp	Gly	Val 395	Trp	Lys	Ser	Pro	Ala 400
Asp	Thr	Pro	Ser	Ser 405	Val	Pro	Leu	Phe	Ser 410	Pro	Pro	Ala	Lys	Ala	Ala
Thr	Phe	Gly	His 420	Gly	Gly	Asn	Lys	Ser 425	Phe	Gly	Val	Ser	Ile 430	Gly	Ser
Ala	Phe 435	Trp	Pro	Thr	Asn	Ala	Asp 440	Ser	Ala	Ala	Glu	Ser 445	Phe	Ala	Ser
Ala 450	Phe	Asn	Asn	Glu	Ser	Thr 455	Glu	Lys	Lys	Gln	Thr 460	Asn	Gly	Asn	Val
Cys 465	Arg	Leu	Phe	Gly	Phe 470	Glu	Leu	Val	Glu	Asn 475	Val	Asn	Val	Asp	Glu 480
Cys	Phe	Ser	Ala	Ala 485	Ser	Val	Ser	Gly	Ala 490	Val	Ala	Val	Asp	Gln 495	Pro
Val	Pro	Ser	Asn 500	Glu	Phe	Asp	Ser	Gly 505	Gln	Gln	Ser	Glu	Pro 510	Leu	Asn
Ile	Asn 515	Gln	Ser	Asp	Ile	Pro	Ser 520	Gly	Ser	Gly	Asp	Pro 525	Glu	Lys	Ser
Ser 530	Leu	Arg	Ser	Pro	Gln 535	Glu	Ser	Gln	Ser	Arg	Gln 540	Ile	Arg	Ser	Cys
Thr 545	Lys	Val	His	Met 550	Gln	Gly	Ser	Ala	Val	Gly 555	Arg	Ala	Ile	Asp	Leu 560
Thr	Arg	Ser	Glu	Cys 565	Tyr	Glu	Asp	Leu	Phe 570	Lys	Lys	Leu	Glu	Glu 575	Met
Phe	Asp	Ile	Lys 580	Gly	Glu	Leu	Leu	Glu 585	Ser	Thr	Lys	Lys	Trp 590	Gln	Val
Val	Tyr 595	Thr	Asp	Asp	Glu	Asp 600	Asp	Met	Met	Met	Val	Gly 605	Asp	Asp	Pro



Arg Ser Ser Ser Met Ala Gly Ser Arg  
660 665

<220>  
<223> G385

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<210> 78
<211> 721
<212> PRT
<213> Arabidopsis thaliana
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<220>  
<223> G385

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20 25 30

Arg Asp Asp Glu Phe Asp Ser Pro Asn Thr Lys Ser Gly Ser Glu Asn  
35 40 45

Gln Glu Gly Gly Ser Gly Asn Asp Gln Asp Pro Leu His Pro Asn Lys  
50 55 60

Lys Lys Arg Tyr His Arg His Thr Gln Leu Gln Ile Gln Glu Met Glu  
65 70 75 80

Ala Phe Phe Lys Glu Cys Pro His Pro Asp Asp Lys Gln Arg Lys Gln  
85 90 95

Leu Ser Arg Glu Leu Asn Leu Glu Pro Leu Gln Val Lys Phe Trp Phe  
100 105 110

Gln Asn Lys Arg Thr Gln Met Lys Asn His His Glu Arg His Glu Asn  
115 120 125

Ser His Leu Arg Ala Glu Asn Glu Lys Leu Arg Asn Asp Asn Leu Arg  
130 135 140

Tyr Arg Glu Ala Leu Ala Asn Ala Ser Cys Pro Asn Cys Gly Gly Pro  
145 150 155 160

Thr Ala Ile Gly Glu Met Ser Phe Asp Glu His Gln Leu Arg Leu Glu  
165 170 175

Asn Ala Arg Leu Arg Glu Glu Ile Asp Arg Ile Ser Ala Ile Ala Ala  
180 185 190

Lys Tyr Val Gly Lys Pro Val Ser Asn Tyr Pro Leu Met Ser Pro Pro  
195 200 205

Pro Leu Pro Pro Arg Pro Leu Glu Leu Ala Met Gly Asn Ile Gly Gly  
210 215 220

Glu Ala Tyr Gly Asn Asn Pro Asn Asp Leu Leu Lys Ser Ile Thr Ala  
225 230 235 240

[illegible]



Pro	Thr	Glu	Ser	Asp	Lys	Pro	Val	Ile	Ile	Asp	Leu	Ser	Val	Ala	Ala
				245					250					255	
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			260					265					270		
Ser	Leu	Ala	Leu	Asp	Glu	Glu	Glu	Tyr	Ala	Arg	Thr	Phe	Pro	Arg	Gly
		275					280					285			
Ile	Gly	Pro	Arg	Pro	Ala	Gly	Tyr	Arg	Ser	Glu	Ala	Ser	Arg	Glu	Ser
	290					295					300				
Ala	Val	Val	Ile	Met	Asn	His	Val	Asn	Ile	Val	Glu	Ile	Leu	Met	Asp
305					310					315					320
Val	Asn	Gln	Trp	Ser	Thr	Ile	Phe	Ala	Gly	Met	Val	Ser	Arg	Ala	Met
				325					330					335	
Thr	Leu	Ala	Val	Leu	Ser	Thr	Gly	Val	Ala	Gly	Asn	Tyr	Asn	Gly	Ala
			340					345					350		
Leu	Gln	Val	Met	Ser	Ala	Glu	Phe	Gln	Val	Pro	Ser	Pro	Leu	Val	Pro
		355					360					365			
Thr	Arg	Glu	Thr	Tyr	Phe	Ala	Arg	Tyr	Cys	Lys	Gln	Gln	Gly	Asp	Gly
	370					375					380				
Ser	Trp	Ala	Val	Val	Asp	Ile	Ser	Leu	Asp	Ser	Leu	Gln	Pro	Asn	Pro
385					390					395					400
Pro	Ala	Arg	Cys	Arg	Arg	Arg	Ala	Ser	Gly	Cys	Leu	Ile	Gln	Glu	Leu
				405					410					415	
Pro	Asn	Gly	Tyr	Ser	Lys	Val	Thr	Trp	Val	Glu	His	Val	Glu	Val	Asp
			420					425					430		
Asp	Arg	Gly	Val	His	Asn	Leu	Tyr	Lys	His	Met	Val	Ser	Thr	Gly	His
		435					440					445			
Ala	Phe	Gly	Ala	Lys	Arg	Trp	Val	Ala	Ile	Leu	Asp	Arg	Gln	Cys	Glu
	450					455					460				
Arg	Leu	Ala	Ser	Val	Met	Ala	Thr	Asn	Ile	Ser	Ser	Gly	Glu	Val	Gly
465					470					475					480
Val	Ile	Thr	Asn	Gln	Glu	Gly	Arg	Arg	Ser	Met	Leu	Lys	Leu	Ala	Glu
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Arg	Met	Val	Ile	Ser	Phe	Cys	Ala	Gly	Val	Ser	Ala	Ser	Thr	Ala	His
			500					505					510		
Thr	Trp	Thr	Thr	Leu	Ser	Gly	Thr	Gly	Ala	Glu	Asp	Val	Arg	Val	Met
		515					520					525			
Thr	Arg	Lys	Ser	Val	Asp	Asp	Pro	Gly	Arg	Ser	Pro	Gly	Ile	Val	Leu
	530					535					540				



Ser Ala Ala Thr Ser Phe Trp Ile Pro Val Pro Pro Lys Arg Val Phe  
 545 550 555 560

Asp Phe Leu Arg Asp Glu Asn Ser Arg Asn Glu Trp Asp Ile Leu Ser  
 565 570 575

Asn Gly Gly Val Val Gln Glu Met Ala His Ile Ala Asn Gly Arg Asp  
 580 585 590

Thr Gly Asn Cys Val Ser Leu Leu Arg Val Asn Ser Ala Asn Ser Ser  
 595 600 605

Gln Ser Asn Met Leu Ile Leu Gln Glu Ser Cys Ile Asp Pro Thr Ala  
 610 615 620

Ser Phe Val Ile Tyr Ala Pro Val Asp Ile Val Ala Met Asn Ile Val  
 625 630 635 640

Leu Asn Gly Gly Asp Pro Asp Tyr Val Ala Leu Leu Pro Ser Gly Phe  
 645 650 655

Ala Ile Leu Pro Asp Gly Asn Ala Asn Ser Gly Ala Pro Gly Gly Asp  
 660 665 670

Gly Gly Ser Leu Leu Thr Val Ala Phe Gln Ile Leu Val Asp Ser Val  
 675 680 685

Pro Thr Ala Lys Leu Ser Leu Gly Ser Val Ala Thr Val Asn Asn Leu  
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Ile Ala Cys Thr Val Glu Arg Ile Lys Ala Ser Met Ser Cys Glu Thr  
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 gaaagttttt atctttttttg gttattgaaa ctttcatagt ttgatcaaaa gagtctcttg 360  
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 ggagttttct agagatcttc ttccgagatt cttcaagcac aataacttct ctagctttat 660  
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00220:0202550



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Val Ser Trp Ser Gln Ser Asn Lys Ser Phe Ile Val Trp Asn Pro Pro
          35          40          45
Glu Phe Ser Arg Asp Leu Leu Pro Arg Phe Phe Lys His Asn Asn Phe
  50          55          60
Ser Ser Phe Ile Arg Gln Leu Asn Thr Tyr Gly Phe Arg Lys Ala Asp
  65          70          75          80
Pro Glu Gln Trp Glu Phe Ala Asn Asp Asp Phe Val Arg Gly Gln Pro
          85          90          95
His Leu Met Lys Asn Ile His Arg Arg Lys Pro Val His Ser His Ser
          100          105          110
Leu Pro Asn Leu Gln Ala Gln Leu Asn Pro Leu Thr Asp Ser Glu Arg
          115          120          125
Val Arg Met Asn Asn Gln Ile Glu Arg Leu Thr Lys Glu Lys Glu Gly
          130          135          140

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Leu Leu Glu Glu Leu His Lys Gln Asp Glu Glu Arg Glu Val Phe Glu  
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 165 170 175  
 Gln Lys Thr Met Val Ser Phe Val Ser Gln Val Leu Glu Lys Pro Gly  
 180 185 190  
 Leu Ala Leu Asn Leu Ser Pro Cys Val Pro Glu Thr Asn Glu Arg Lys  
 195 200 205  
 Arg Arg Phe Pro Arg Ile Glu Phe Phe Pro Asp Glu Pro Met Leu Glu  
 210 215 220  
 Glu Asn Lys Thr Cys Val Val Val Arg Glu Glu Gly Ser Thr Ser Pro  
 225 230 235 240  
 Ser Ser His Thr Arg Glu His Gln Val Glu Gln Leu Glu Ser Ser Ile  
 245 250 255  
 Ala Ile Trp Glu Asn Leu Val Ser Asp Ser Cys Glu Ser Met Leu Gln  
 260 265 270  
 Ser Arg Ser Met Met Thr Leu Asp Val Asp Glu Ser Ser Thr Phe Pro  
 275 280 285  
 Glu Ser Pro Pro Leu Ser Cys Ile Gln Leu Ser Val Asp Ser Arg Leu  
 290 295 300  
 Lys Ser Pro Pro Ser Pro Arg Ile Ile Asp Met Asn Cys Glu Pro Asp  
 305 310 315 320  
 Gly Ser Lys Glu Gln Asn Thr Val Ala Ala Pro Pro Pro Pro Val  
 325 330 335  
 Ala Gly Ala Asn Asp Gly Phe Trp Gln Gln Phe Phe Ser Glu Asn Pro  
 340 345 350  
 Gly Ser Thr Glu Gln Arg Glu Val Gln Leu Glu Arg Lys Asp Asp Lys  
 355 360 365  
 Asp Lys Ala Gly Val Arg Thr Glu Lys Cys Trp Trp Asn Ser Arg Asn  
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<213> Arabidopsis thaliana
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<223> G25

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Pro	Val	Ser 35	Val	Ser	Glu	Glu	Arg 40	Asp	Gly	Lys	Arg	Glu 45	Arg	Lys	Asn
Leu	Tyr 50	Arg	Gly	Ile	Arg	Gln 55	Arg	Pro	Trp	Gly	Lys 60	Trp	Ala	Ala	Glu
Ile 65	Arg	Asp	Pro	Ser	Lys 70	Gly	Val	Arg	Val	Trp 75	Leu	Gly	Thr	Phe	Lys 80
Thr	Ala	Asp	Glu	Ala 85	Ala	Arg	Ala	Tyr	Asp 90	Val	Ala	Ala	Ile	Lys 95	Ile
Arg	Gly	Arg	Lys 100	Ala	Lys	Leu	Asn	Phe 105	Pro	Asn	Thr	Gln	Val 110	Glu	Glu
Glu	Ala	Asp 115	Thr	Lys	Pro	Gly	Gly 120	Asn	Gln	Asn	Glu	Leu 125	Ile	Ser	Glu
Asn 130	Gln	Val	Glu	Ser	Leu	Ser 135	Glu	Asp	Leu	Met	Ala 140	Leu	Glu	Asp	Tyr
Met 145	Arg	Phe	Tyr	Gln	Ile 150	Pro	Val	Ala	Asp	Asp 155	Gln	Ser	Ala	Thr	Asp 160



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<223> G610

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gttggaagaa agtgaaagt cctcaacgtc tacctatgca tctgaagctg ataactctga 360  
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atccgagttt ttcgatccag gaaacctgc ttcaaagtcc actagtgaat atactagcgt 480  
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<213> Arabidopsis thaliana



<223> G610

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35 40 45

Ala Ser Leu Ala Gly Lys Leu Leu Glu Glu Ser Glu Ser Ser Ser Thr  
50 55 60

Ser Thr Tyr Ala Ser Glu Ala Asp Asn Leu Asp His Leu Gly Gly Leu  
65 70 75 80

Ile Lys Gln Glu Leu Glu Asp Gly Tyr Thr Thr Lys Pro Cys Lys Ser  
85 90 95

Glu Phe Phe Asp Pro Gly Asn Pro Ala Ser Lys Ser Thr Ser Glu Asn  
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Thr Ser Val Thr Cys Leu Pro Phe Ser Ser Phe Glu Asn Asp Cys Ile  
115 120 125

Leu Glu Gln Thr Pro Val Ser Asp Cys Lys Arg Ala Ser Gly Leu Lys  
130 135 140

Ser Leu Val Gly Ser Ile Thr Glu Glu Thr Cys Val Val Asn Glu Asp  
145 150 155 160

Ala Gly Ser Glu Gln Gly Ala Asn Thr Phe Ser Leu Lys Asp Pro Ser  
165 170 175

Gln Leu His Ser Gln Ser Pro Glu Ser Val Leu Leu Asp Gly Asp Val  
180 185 190

Lys Leu Ala Pro Cys Thr Asp Gln Val Pro Asn Asp Ser Phe Lys Gly  
195 200 205

Tyr Arg Asn His Ser Lys Leu Val Cys Arg Asp Asp Asp Glu Asn Tyr  
210 215 220

Cys Lys Tyr Tyr Lys Phe Ser Asp Lys Cys Lys Ser Tyr Arg Pro Leu  
225 230 235 240

Ser Arg Val Gly Asn Arg Arg Ile Met Gln Ser Val Arg Ala Ile Ser  
245 250 255

Lys Leu Lys Cys Phe Glu Asp Thr Arg Thr Asp Gly Arg Leu Lys Ala  
260 265 270

Leu Tyr Arg Lys Arg Lys Leu Cys Tyr Gly Tyr Asn Pro Trp Lys Arg  
275 280 285











Gly	Glu	Gly	Ser	Trp	Arg	Ser	Leu	Pro	Lys	Asn	Ala	Gly	Leu	Lys	Arg
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	50					55					60				
Leu	Lys	Arg	Gly	Asn	Ile	Thr	Pro	Glu	Glu	Glu	Glu	Leu	Val	Val	Lys
65					70					75					80
Leu	His	Ser	Thr	Leu	Gly	Asn	Arg	Trp	Ser	Leu	Ile	Ala	Gly	His	Leu
				85					90					95	
Pro	Gly	Arg	Thr	Asp	Asn	Glu	Ile	Lys	Asn	Tyr	Trp	Asn	Ser	His	Leu
			100					105					110		
Ser	Arg	Lys	Leu	His	Asn	Phe	Ile	Arg	Lys	Pro	Ser	Ile	Ser	Gln	Asp
		115					120					125			
Val	Ser	Ala	Val	Ile	Met	Ala	Asn	Ala	Ser	Ser	Ala	Pro	Pro	Pro	Pro
	130					135					140				
Gln	Ala	Lys	Arg	Arg	Leu	Gly	Arg	Thr	Ser	Arg	Ser	Ala	Met	Lys	Pro
145					150					155					160
Lys	Ile	Arg	Arg	Thr	Lys	Thr	Arg	Lys	Thr	Lys	Lys	Thr	Ser	Ala	Pro
				165					170					175	
Pro	Glu	Pro	Asn	Ala	Asp	Val	Ala	Gly	Ala	Asp	Lys	Glu	Ala	Leu	Met
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Val	Glu	Ser	Ser	Gly	Ala	Glu	Ala	Glu	Leu	Gly	Arg	Pro	Cys	Asp	Tyr
		195					200					205			
Tyr	Gly	Asp	Asp	Cys	Asn	Lys	Asn	Leu	Met	Ser	Ile	Asn	Gly	Asp	Asn
	210					215						220			
Gly	Val	Leu	Thr	Phe	Asp	Asp	Asp	Ile	Ile	Asp	Leu	Leu	Leu	Asp	Glu
225					230					235					240
Ser	Asp	Pro	Gly	His	Leu	Tyr	Thr	Asn	Thr	Thr	Cys	Gly	Gly	Gly	Gly
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Glu	Leu	His	Asn	Ile	Arg	Asp	Ser	Glu	Gly	Ala	Arg	Gly	Phe	Ser	Asp
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Thr	Trp	Asn	Gln	Gly	Asn	Leu	Asp	Cys	Leu	Leu	Gln	Ser	Cys	Pro	Ser
		275					280					285			
Val	Glu	Ser	Phe	Leu	Asn	Tyr	Asp	His	Gln	Val	Asn	Asp	Ala	Ser	Thr
	290					295					300				
Asp	Glu	Phe	Ile	Asp	Trp	Asp	Cys	Val	Trp	Gln	Glu	Gly	Ser	Asp	Asn
305					310					315					320
Asn	Leu	Trp	His	Glu	Lys	Glu	Asn	Pro	Asp	Ser	Met	Val	Ser	Trp	Leu
				325					330					335	



Leu Asp Gly Asp Asp Glu Ala Thr Ile Gly Asn Ser Asn Cys Glu Asn  
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 gatttttagg agtactatta ttagtacgtg acatgtatat gtttttgcct cgttgtagag 900  
 gtttggggtt ataattaata tataatgta tctaataatgc aaccttgata catatttgga 960  
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00220 0202350



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acgagaatat	caaccaacgg	tagtgaattt	aggtttccgg	tgagtctctc	aggtatttcgt	300
gatcgtgaag	atgaagattt	ttcattctggc	gttgctggag	ataatgaccg	tgaagttccc	360
ggcgaagtgg	attttctctc	cgacaagaaa	tctagggttt	gtcgtgaaga	cgacgaagga	420
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			20					25					30			
Asn	Pro	Leu	Ala	Met	Ser	Arg	Ile	Asp	Glu	Glu	Asp	Asp	Gln	Lys	Thr	
		35					40					45				
Arg	Ile	Ser	Thr	Asn	Gly	Ser	Glu	Phe	Arg	Phe	Pro	Val	Ser	Leu	Ser	
	50					55					60					
Gly	Ile	Arg	Asp	Arg	Glu	Asp	Glu	Asp	Phe	Ser	Ser	Gly	Val	Ala	Gly	
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Asp	Asn	Asp	Arg	Glu	Val	Pro	Gly	Glu	Val	Asp	Phe	Phe	Ser	Asp	Lys	
				85					90					95		
Lys	Ser	Arg	Val	Cys	Arg	Glu	Asp	Asp	Glu	Gly	Phe	Arg	Val	Lys	Lys	
			100					105					110			



Glu 115	Glu	Gln	Asp	Asp	Arg	Thr	Asp	Val	Asn	Thr	Gly	Leu	Asn	Leu	Arg
Thr 130	Thr	Gly	Asn	Thr	Lys	Ser	Asp	Glu	Ser	Met	Ile	Asp	Asp	Gly	Glu
Ser 145	Ser	Glu	Met	Glu	Asp	Lys	Arg	Ala	Lys	Asn	Glu	Leu	Val	Lys	Leu
Gln 165	Asp	Glu	Leu	Lys	Lys	Met	Thr	Met	Asp	Asn	Gln	Lys	Leu	Arg	Glu
Leu 180	Leu	Thr	Gln	Val	Ser	Asn	Ser	Tyr	Thr	Ser	Leu	Gln	Met	His	Leu
Val 195	Ser	Leu	Met	Gln	Gln	Gln	Gln	Gln	Gln	Asn	Asn	Lys	Val	Ile	Glu
Ala 210	Ala	Glu	Lys	Pro	Glu	Glu	Thr	Ile	Val	Pro	Arg	Gln	Phe	Ile	Asp
Leu 225	Gly	Pro	Thr	Arg	Ala	Val	Gly	Glu	Ala	Glu	Asp	Val	Ser	Asn	Ser
Ser 245	Ser	Glu	Asp	Arg	Thr	Arg	Ser	Gly	Gly	Ser	Ser	Ala	Ala	Glu	Arg
Arg 260	Ser	Asn	Gly	Lys	Arg	Leu	Gly	Arg	Glu	Glu	Ser	Pro	Glu	Thr	Glu
Ser 275	Asn	Lys	Ile	Gln	Lys	Val	Asn	Ser	Thr	Thr	Pro	Thr	Thr	Phe	Asp
Gln 290	Thr	Ala	Glu	Ala	Thr	Met	Arg	Lys	Ala	Arg	Val	Ser	Val	Arg	Ala
Arg 305	Ser	Glu	Ala	Pro	Met	Ile	Ser	Asp	Gly	Cys	Gln	Trp	Arg	Lys	Tyr
Gly 325	Gln	Lys	Met	Ala	Lys	Gly	Asn	Pro	Cys	Pro	Arg	Ala	Tyr	Tyr	Arg
Cys 340	Thr	Met	Ala	Thr	Gly	Cys	Pro	Val	Arg	Lys	Gln	Val	Gln	Arg	Cys
Ala 355	Glu	Asp	Arg	Ser	Ile	Leu	Ile	Thr	Thr	Tyr	Glu	Gly	Asn	His	Asn
His 370	Pro	Leu	Pro	Pro	Ala	Ala	Val	Ala	Met	Ala	Ser	Thr	Thr	Thr	Ala
Ala 385	Ala	Asn	Met	Leu	Leu	Ser	Gly	Ser	Met	Ser	Ser	His	Asp	Gly	Met
Met 405	Asn	Pro	Thr	Asn	Leu	Leu	Ala	Arg	Ala	Val	Leu	Pro	Cys	Ser	Thr



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<210> 91
<211> 1554
<212> DNA
<213> Arabidopsis thaliana
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ccttgaaacc	attcctatgg	gaaatagcag	cgaggaacca	aagcctccta	ccaaatcaga	180
taaaccatct	tcacccccgg	tggatcaaac	aaatgcttat	gtctaccctg	attgggcagc	240
tatgcaggca	tattatggtc	caagagtagc	aatgcctcct	tattacaatt	cagctattggc	300
tgcattctggt	catcctcttc	ctccttacat	gtggaatcct	cagcatatga	tgtcaccatc	360
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tcccatggga	tactgcttc	aagggtcaaaa	ggatccacct	ttaacaactc	cggggacgct	480
tttgagcatc	gacactccta	ctaaatctac	agggaaacaca	gacaatggat	tgatgaagaa	540
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gtcaagatta	aggaaacagg	ccgagacaga	agaacttgct	aggaaagtgg	aagccttgac	1020
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aagaggagca	aatgcaacct	tgttggagaa	actggaatgc	tcggaacccg	aaaagagagt	1140
ccccgcaaat	atgttgctcta	gagttgaaga	ctcaggagct	ggagataaaga	acaagaacca	1200
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<210> 92
<211> 382
<212> PRT
<213> Arabidopsis thaliana
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Trp	Ala	Ala 35	Met	Gln	Ala	Tyr	Tyr 40	Gly	Pro	Arg	Val	Ala 45	Met	Pro	Pro
Tyr	Tyr 50	Asn	Ser	Ala	Met	Ala 55	Ala	Ser	Gly	His	Pro 60	Pro	Pro	Pro	Tyr
Met 65	Trp	Asn	Pro	Gln	His 70	Met	Met	Ser	Pro	Ser	Gly	Ala	Pro	Tyr	Ala 80
Ala	Val	Tyr	Pro	His 85	Gly	Gly	Gly	Val	Tyr 90	Ala	His	Pro	Gly	Ile 95	Pro
Met	Gly	Ser	Leu 100	Pro	Gln	Gly	Gln	Lys 105	Asp	Pro	Pro	Leu	Thr 110	Thr	Pro
Gly	Thr	Leu 115	Leu	Ser	Ile	Asp	Thr 120	Pro	Thr	Lys	Ser	Thr 125	Gly	Asn	Thr
Asp 130	Asn	Gly	Leu	Met	Lys	Lys 135	Leu	Lys	Glu	Phe	Asp 140	Gly	Leu	Ala	Met
Ser 145	Leu	Gly	Asn	Gly	Asn 150	Pro	Glu	Asn	Gly	Ala 155	Asp	Glu	His	Lys	Arg 160
Ser	Arg	Asn	Ser	Ser 165	Glu	Thr	Asp	Gly	Ser 170	Thr	Asp	Gly	Ser	Asp 175	Gly
Asn	Thr	Thr	Gly 180	Ala	Asp	Glu	Pro	Lys 185	Leu	Lys	Arg	Ser	Arg 190	Glu	Gly
Thr	Pro	Thr 195	Lys	Asp	Gly	Lys	Gln 200	Leu	Val	Gln	Ala	Ser 205	Ser	Phe	His
Ser	Val 210	Ser	Pro	Ser	Ser	Gly 215	Asp	Thr	Gly	Val	Lys 220	Leu	Ile	Gln	Gly



Ser Gly Ala Ile Leu Ser Pro Gly Val Ser Ala Asn Ser Asn Pro Phe  
225 230 235 240

Met Ser Gln Ser Leu Ala Met Val Pro Pro Glu Thr Trp Leu Gln Asn  
245 250 255

Glu Arg Glu Leu Lys Arg Glu Arg Arg Lys Gln Ser Asn Arg Glu Ser  
260 265 270

Ala Arg Arg Ser Arg Leu Arg Lys Gln Ala Glu Thr Glu Glu Leu Ala  
275 280 285

Arg Lys Val Glu Ala Leu Thr Ala Glu Asn Met Ala Leu Arg Ser Glu  
290 295 300

Leu Asn Gln Leu Asn Glu Lys Ser Asp Lys Leu Arg Gly Ala Asn Ala  
305 310 315 320

Thr Leu Leu Asp Lys Leu Lys Cys Ser Glu Pro Glu Lys Arg Val Pro  
325 330 335

Ala Asn Met Leu Ser Arg Val Lys Asn Ser Gly Ala Gly Asp Lys Asn  
340 345 350

Lys Asn Gln Gly Asp Asn Asp Ser Asn Ser Thr Ser Lys Phe His Gln  
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<212> DNA  
<213> Arabidopsis thaliana

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<223> G255

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ctcacggtga aggttggtgg cgatctcttc ctagagccgc tggctctcct cgctgcggta 180  
aaagctgccc tcttcggtgg attaaactatc tccgacctga tctcaaaaga ggaaacttta 240  
cacatgatga agatgaactt atcatcaagc ttcatagcct cctaggcaac aagtgggtctt 300  
tgattgcggc gagattacct ggaagaacag ataacgagat caagaactac tggaacacac 360  
atataaagag gaagcttttg agcaaagga ttgatccagc cactcataga gggatcaacg 420  
aggcaaaaat ttctgatttg aagaaaacaa aggaccaa atgtaaaagat gtttcttttg 480  
tgacaaagtt tgaggaaaca gacaagtctg gggaccagaa gcaaaataag tatattcgaa 540  
atgggttagt ttgcaaagaa gagagagttg ttgttgaaga aaaaataggc ccagatttga 600  
atcttgagct taggatcagt ccaccatggc aaaaccagag agaaatatct acttgcaactg 660  
cgtcccgttt ttacatggaa aacgacatgg agtgtagtag tgaaactgtg aaatgtcaaa 720  
cagagaatag tagcagcatt agctattctt ctattgatat tagtagtagt aacgttggtt 780  
atgacttctt gggtttgaag acaagaattt tggattttcg aagcttgga atgaaataaa 840  
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002220-022220



<210> 94

<212> PRT

**<220>**

<400> 94

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Gly Glu Gly Cys Trp Arg Ser Leu Pro Arg Ala Ala Gly Leu Leu Arg  
35 40 45

Cys Gly Lys Ser Cys Arg Leu Arg Trp Ile Asn Tyr Leu Arg Pro Asp  
50 55 60

Leu Lys Arg Gly Asn Phe Thr His Asp Glu Asp Glu Leu Ile Ile Lys  
65 70 75 80

Leu His Ser Leu Leu Gly Asn Lys Trp Ser Leu Ile Ala Ala Arg Leu  
85 90 95

Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn Tyr Trp Asn Thr His Ile  
100 105 110

Lys Arg Lys Leu Leu Ser Lys Gly Ile Asp Pro Ala Thr His Arg Gly  
115 120 125

Ile Asn Glu Ala Lys Ile Ser Asp Leu Lys Lys Thr Lys Asp Gln Ile  
130 135 140

Val Lys Asp Val Ser Phe Val Thr Lys Phe Glu Glu Thr Asp Lys Ser  
145 150 155 160

Gly Asp Gln Lys Gln Asn Lys Tyr Ile Arg Asn Gly Leu Val Cys Lys  
165 170 175

Glu Glu Arg Val Val Val Glu Glu Lys Ile Gly Pro Asp Leu Asn Leu  
180 185 190

Glu Leu Arg Ile Ser Pro Pro Trp Gln Asn Gln Arg Glu Ile Ser Thr  
195 200 205

Cys Thr Ala Ser Arg Phe Tyr Met Glu Asn Asp Met Glu Cys Ser Ser  
210 215 220

Glu Thr Val Lys Cys Gln Thr Glu Asn Ser Ser Ser Ile Ser Tyr Ser  
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<212> DNA
<213> Arabidopsis thaliana
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tggcttggct	cttacacaac	cgatatcgcc	gccgctagag	cctacgacgt	ggccgtcttc	240	
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catctctcag	cgcgccaccac	cgctgacatg	ccgcgagctc	ttataaggga	aaaagcggcg	360	
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actccgccgg	taataaaaacc	cgacttgaat	caaatacccg	aatccggaga	tatatagtca	480	
atztatatac	atgtagtttg	ttttgtttga	ttagaagatt	acattttacat	acaagataca	540	
catagatact	ggaaaatata	ggtatgtata	cattcataaa	ttatcttatg	tatcaaagaa	600	
ttttatagat	tctgtattagc	tttttgtttt	tgtttttgat	aagaactctg	attagttgtc	660	
cggagacaaa	accggctaag	agcaatccat	gagaagctag	cgagtgtttt	ttagttcaag	720	
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<210> 96
<211> 153
<212> PRT
<213> Arabidopsis thaliana
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<220>  
<223> G3

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      20              25              30

Gly Ile Arg Arg Arg Lys Trp Gly Lys Trp Val Ala Glu Ile Arg Glu
      35              40              45

Pro Asn Lys Arg Ser Arg Leu Trp Leu Gly Ser Tyr Thr Thr Asp Ile
  50              55              60

Ala Ala Ala Arg Ala Tyr Asp Val Ala Val Phe Tyr Leu Arg Gly Pro
  65              70              75              80

Ser Ala Arg Leu Asn Phe Pro Asp Leu Leu Leu Gln Glu Glu Asp His
      85              90              95

Leu Ser Ala Ala Thr Thr Ala Asp Met Pro Ala Ala Leu Ile Arg Glu
      100              105              110

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Gly Leu Gln Pro Arg Gln Met Thr Ile Trp Phe Gln Asn Lys Arg Ala  
 65 70 75 80  
 Arg Trp Lys Thr Lys Gln Leu Glu Lys Glu Tyr Asn Thr Leu Arg Ala  
 85 90 95  
 Asn Tyr Asn Asn Leu Ala Ser Gln Phe Glu Ile Met Lys Lys Glu Lys  
 100 105 110  
 Gln Ser Leu Val Ser Glu Leu Gln Arg Leu Asn Glu Glu Met Gln Arg  
 115 120 125  
 Pro Lys Glu Glu Lys His His Glu Cys Cys Gly Asp Gln Gly Leu Ala  
 130 135 140  
 Leu Ser Ser Ser Thr Glu Ser His Asn Gly Lys Ser Glu Pro Glu Gly  
 145 150 155 160  
 Arg Leu Asp Gln Gly Ser Val Leu Cys Asn Asp Gly Asp Tyr Asn Asn  
 165 170 175  
 Asn Ile Lys Thr Glu Tyr Phe Arg Val Gln Gly Glu Thr Asp His Glu  
 180 185 190  
 Leu Met Asn Ile Val Glu Lys Ala Asp Asp Ser Cys Leu Thr Ser Ser  
 195 200 205  
 Glu Asn Trp Gly Gly Phe Asn Ser Asp Ser Leu Leu Asp Gln Ser Ser  
 210 215 220  
 Ser Asn Tyr Pro Asn Trp Trp Glu Phe Trp Ser  
 225 230 235

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 <211> 1339  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <223> G515

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 ccttttccct tcttttttga tcgctgcaga gaaatggaaa ctctgtggg ttaagattc 180  
 tgtccgaccg acgaggagat cgtcgtcgat tacctttggc cgaaaaattc cgatagagac 240  
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 ttaccttgcc agtcaaggat caaactgaaa gatgtggctt ggtgtttctt cagacctaa 360  
 gagaacaaat atggcagagg tgatcagcag atgagaaaaa cgaaatctgg gttttggaag 420  
 agtactggca gaccaaagcc tatcatgcgt aatcgccaac agatcgggtg gaaaaagatt 480  
 ttgatgtttt acacgagtaa ggaatccaaa tccgattggg ttatacacga gtaccacggt 540  
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 atgagagaga agtcttcctc ttctccttct tcttctggtg ttagtggaat tgagcacaga 660  
 cgtcgtgact ctttaatccc tcagcttgct aacaattctg agggatcctc acttcacaga 720  
 gaagatccaa gtcagtttgg tgatgtgctg caagaagctc caatcgagga tgctaaactg 780  
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<211> 338
<212> PRT
<213> Arabidopsis thaliana
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Val	Val	Asp	Tyr	Leu	Trp	Pro	Lys	Asn	Ser	Asp	Arg	Asp	Thr	Ser	His
			20					25					30		
Val	Asp	Arg	Phe	Ile	Asn	Thr	Val	Pro	Val	Cys	Arg	Leu	Asp	Pro	Trp
		35					40					45			
Glu	Leu	Pro	Cys	Gln	Ser	Arg	Ile	Lys	Leu	Lys	Asp	Val	Ala	Trp	Cys
	50					55					60				
Phe	Phe	Arg	Pro	Lys	Glu	Asn	Lys	Tyr	Gly	Arg	Gly	Asp	Gln	Gln	Met
65					70					75					80
Arg	Lys	Thr	Lys	Ser	Gly	Phe	Trp	Lys	Ser	Thr	Gly	Arg	Pro	Lys	Pro
				85					90					95	
Ile	Met	Arg	Asn	Arg	Gln	Gln	Ile	Gly	Glu	Lys	Lys	Ile	Leu	Met	Phe
			100					105					110		
Tyr	Thr	Ser	Lys	Glu	Ser	Lys	Ser	Asp	Trp	Val	Ile	His	Glu	Tyr	His
		115					120					125			
Gly	Phe	Ser	His	Asn	Gln	Met	Met	Met	Thr	Tyr	Thr	Leu	Cys	Lys	Val
	130					135					140				
Met	Phe	Asn	Gly	Gly	Met	Arg	Glu	Lys	Ser	Ser	Ser	Ser	Pro	Ser	Ser
145					150					155					160
Ser	Gly	Val	Ser	Gly	Ile	Glu	Gln	Ser	Arg	Arg	Asp	Ser	Leu	Ile	Pro
				165					170					175	
Gln	Leu	Val	Asn	Asn	Ser	Glu	Gly	Ser	Ser	Leu	His	Arg	Glu	Asp	Pro
			180					185					190		
Ser	Gln	Phe	Gly	Asp	Val	Leu	Gln	Glu	Ala	Pro	Ile	Glu	Asp	Ala	Lys
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Gln Tyr

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<223> G390

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atgaaacatc	gaatccacac	tgcttctggg	acgaccacag	acaacagctg	tgagctgtg	420
gtcgtgagtg	gtcagcaacg	tcagcagcaa	aacccaacac	atcagcatcc	tcagcgtgat	480
gttaacaacc	cagctaatct	tctctcgatt	cgggaggaga	ccttggcggg	gttcctttgc	540
aaggctacag	gaactgctgt	cgactgggtc	cagatgattg	ggatgaagcc	tggtccggat	600
tctattggta	tcgtagctgt	ttcacgcaac	tgcaagtggaa	tagcagcacg	tgctctggc	660
ctcgtgagtt	tagaacccat	gaaggtcgct	gaaatcctca	aagatcgccc	atcttggttc	720
cgtagctgtc	gatgtgtcga	gactctgaat	gttataccca	ctggaaatgg	tggtactatc	780
gagcttgta	acactcagat	ttatgtcctc	acaacattag	cagcagctcg	tgacttttgg	840
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acttctgcaa	ctggtggccc	caatggtcca	ctttcttcaa	gcttcgtgag	agccaaaatg	960
ctgtcaagcg	ggtttcttat	ccgtccttgt	gatggtggtg	gttccattat	tcacatcggt	1020
gatcatgtgg	acttgtagtg	ctcaagtgtt	cctgaagtc	tcaggcctct	ttatgagtc	1080
tccaaaatcc	tgtctcaaaa	aatgactgtc	gctgctctga	gacatgtg	ccaaattgct	1140
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<211> 841
<212> PRT
<213> Arabidopsis thaliana
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      20                      25                      30

Leu Glu Arg Val Tyr Ala Glu Cys Pro Lys Pro Ser Ser Leu Arg Arg
      35                      40                      45

Gln Gln Leu Ile Arg Glu Cys Pro Ile Leu Cys Asn Ile Glu Pro Arg
  50                      55                      60

Gln Ile Lys Val Trp Phe Gln Asn Arg Arg Cys Arg Glu Lys Gln Arg
  65                      70                      75                      80

Lys Glu Ser Ala Arg Leu Gln Thr Val Asn Arg Lys Leu Ser Ala Met
      85                      90                      95

Asn Lys Leu Leu Met Glu Glu Asn Asp Arg Leu Gln Lys Gln Val Ser
      100                      105                      110

Asn Leu Val Tyr Glu Asn Gly Phe Met Lys His Arg Ile His Thr Ala
      115                      120                      125

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Ser	Gly	Thr	Thr	Thr	Asp	Asn	Ser	Cys	Glu	Ser	Val	Val	Val	Ser	Gly
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Gln	Gln	Arg	Gln	Gln	Gln	Asn	Pro	Thr	His	Gln	His	Pro	Gln	Arg	Asp
145					150					155					160
Val	Asn	Asn	Pro	Ala	Asn	Leu	Leu	Ser	Ile	Ala	Glu	Glu	Thr	Leu	Ala
				165					170					175	
Glu	Phe	Leu	Cys	Lys	Ala	Thr	Gly	Thr	Ala	Val	Asp	Trp	Val	Gln	Met
			180					185					190		
Ile	Gly	Met	Lys	Pro	Gly	Pro	Asp	Ser	Ile	Gly	Ile	Val	Ala	Val	Ser
		195					200					205			
Arg	Asn	Cys	Ser	Gly	Ile	Ala	Ala	Arg	Ala	Cys	Gly	Leu	Val	Ser	Leu
	210					215					220				
Glu	Pro	Met	Lys	Val	Ala	Glu	Ile	Leu	Lys	Asp	Arg	Pro	Ser	Trp	Phe
225					230					235					240
Arg	Asp	Cys	Arg	Cys	Val	Glu	Thr	Leu	Asn	Val	Ile	Pro	Thr	Gly	Asn
				245					250					255	
Gly	Gly	Thr	Ile	Glu	Leu	Val	Asn	Thr	Gln	Ile	Tyr	Ala	Pro	Thr	Thr
			260					265					270		
Leu	Ala	Ala	Ala	Arg	Asp	Phe	Trp	Thr	Leu	Arg	Tyr	Ser	Thr	Ser	Leu
		275					280					285			
Glu	Asp	Gly	Ser	Tyr	Val	Val	Cys	Glu	Arg	Ser	Leu	Thr	Ser	Ala	Thr
	290					295					300				
Gly	Gly	Pro	Asn	Gly	Pro	Leu	Ser	Ser	Ser	Phe	Val	Arg	Ala	Lys	Met
305					310					315					320
Leu	Ser	Ser	Gly	Phe	Leu	Ile	Arg	Pro	Cys	Asp	Gly	Gly	Gly	Ser	Ile
				325					330					335	
Ile	His	Ile	Val	Asp	His	Val	Asp	Leu	Asp	Val	Ser	Ser	Val	Pro	Glu
			340					345					350		
Val	Leu	Arg	Pro	Leu	Tyr	Glu	Ser	Ser	Lys	Ile	Leu	Ala	Gln	Lys	Met
		355					360					365			
Thr	Val	Ala	Ala	Leu	Arg	His	Val	Arg	Gln	Ile	Ala	Gln	Glu	Thr	Ser
	370					375					380				
Gly	Glu	Val	Gln	Tyr	Ser	Gly	Gly	Arg	Gln	Pro	Ala	Val	Leu	Arg	Thr
385					390					395					400
Phe	Ser	Gln	Arg	Leu	Cys	Arg	Gly	Phe	Asn	Asp	Ala	Val	Asn	Gly	Phe
				405					410					415	
Val	Asp	Asp	Gly	Trp	Ser	Pro	Met	Ser	Ser	Asp	Gly	Gly	Glu	Asp	Ile
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<211> 1771
<212> DNA
<213> Arabidopsis thaliana

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<223> G1034

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ttgcatatta atttctttca ttttaatacc tgatacaaaa aagtcgctct aatatataat 180
ttattctcaa actttcaata cactccacac agcatggaaa ctgtacgata tccaaagtac 240
gaaaattcgc cggccgagac catggtggaa agcttcgtgt cgacaccttc ttcatattcat 300
aaccctccac ttttcgacaa caacttaaac cctgtagatg ggttttcccc acaatcattt 360
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Val Ser Ala Gly Arg Gly Arg Gly Asn Val Gly Arg Gly Glu Asn Thr
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Tyr Gly Ser Gln Arg Ser Ser Gly Arg Val Met Ile Pro Leu Lys Met  
115 120 125

Glu Thr Glu Glu Asp Gly Thr Ile Tyr Val Asn Ser Lys Gln Tyr His  
130 135 140

Gly Ile Ile Arg Arg Arg Gln Ser Arg Ala Lys Ala Glu Lys Leu Ser  
145 150 155 160

Arg Cys Arg Lys Pro Tyr Met His His Ser Arg His Leu His Ala Met  
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Arg Arg Pro Arg Gly Ser Gly Gly Arg Phe Leu Asn Thr Lys Thr Ala  
180 185 190

Asp Ala Ala Lys Gln Ser Lys Pro Ser Asn Ser Gln Ser Ser Glu Val  
195 200 205

Phe His Pro Glu Asn Glu Thr Ile Asn Ser Ser Arg Glu Ala Asn Glu  
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